COMPUTERWORLD

WHERE DISTRIBUTED COMPUTING MEETS BUSINESS OBJECTIVES

CLIENT/SERVER JOURNAL

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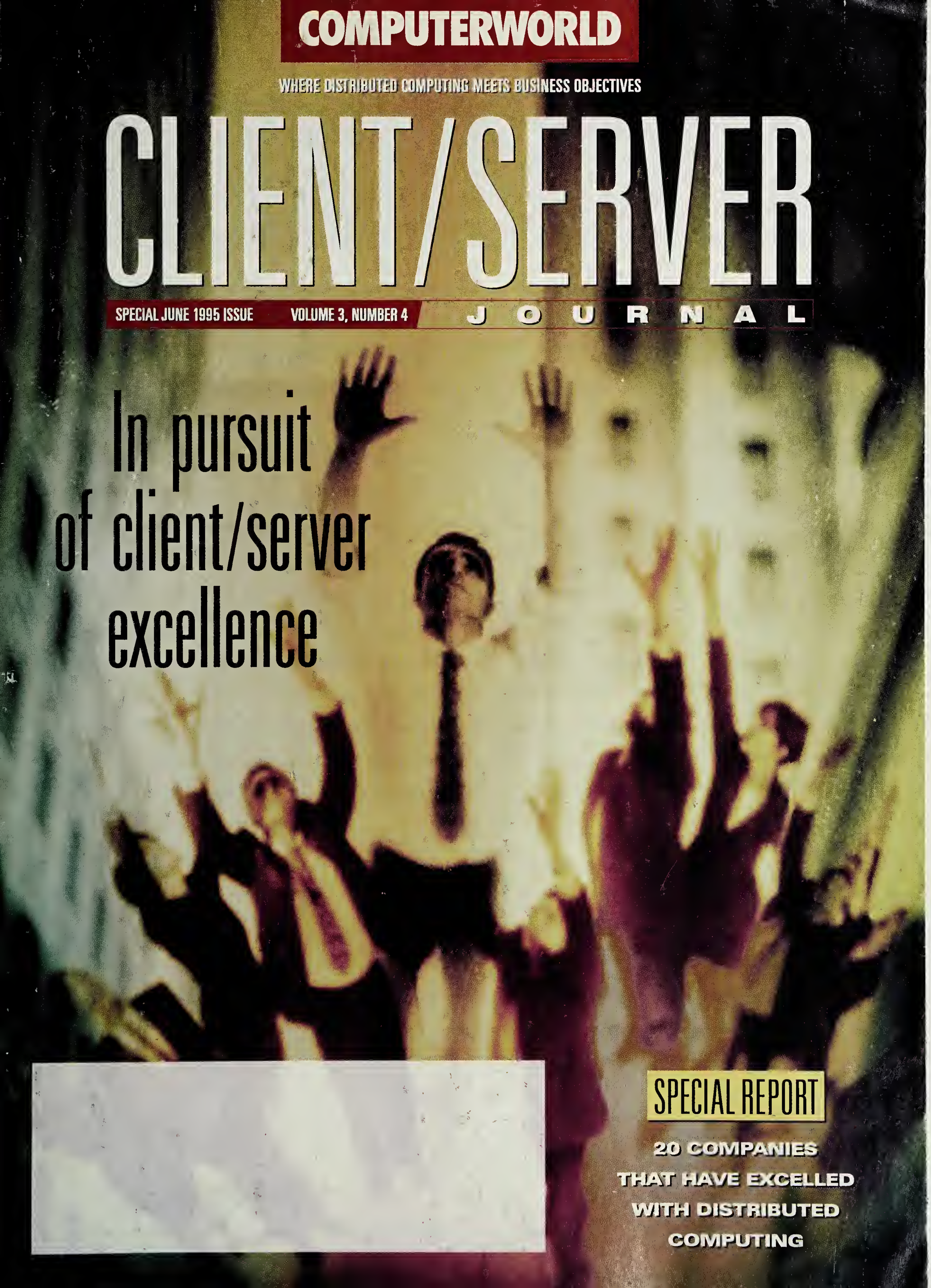
In pursuit of client/server excellence



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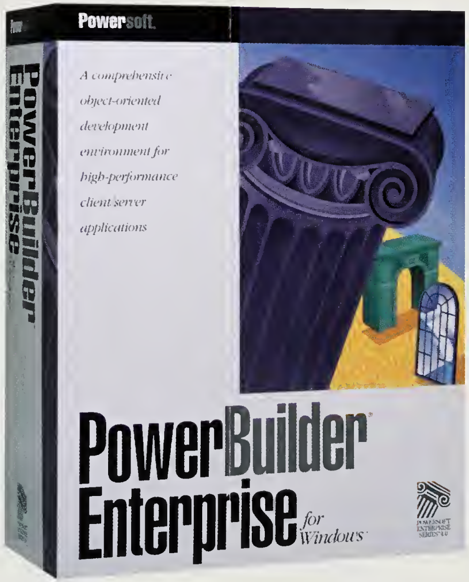
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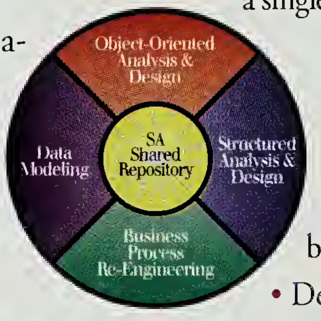
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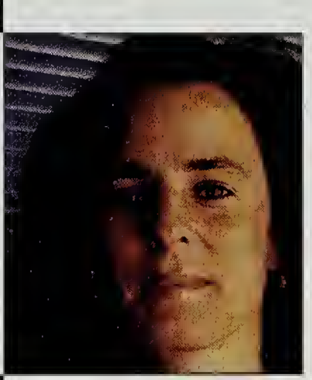

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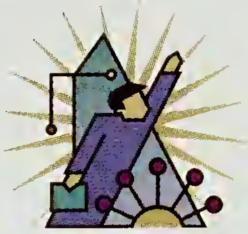

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CSJ thanks the following for their help: CSJ senior editor Mary Brandel; Bob Fink, CW's senior research manager; Colleen Irish, Cambridge Technology Partners' (CTP) communications manager; and Maria Batagglia, who early on coordinated CTP's efforts.

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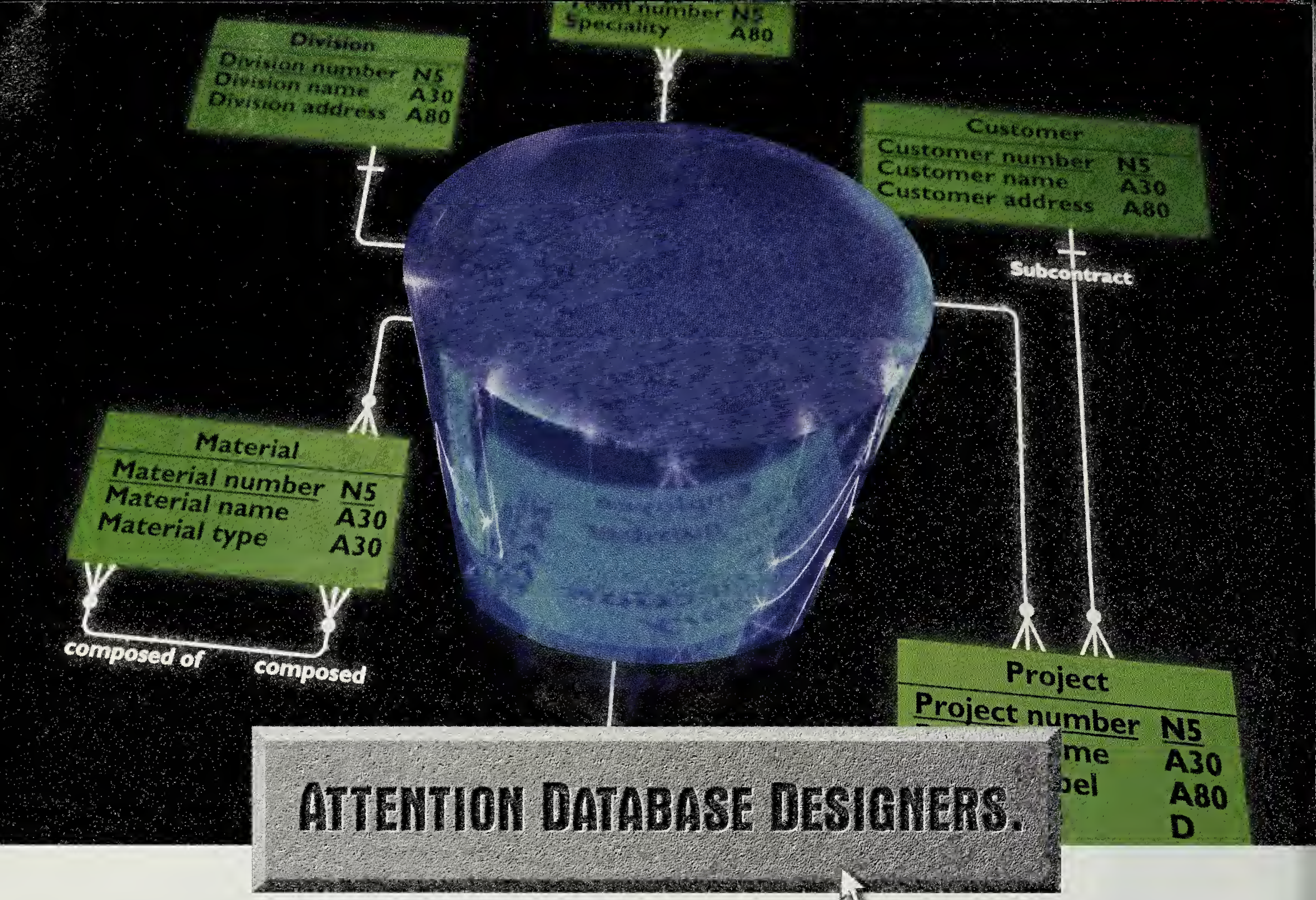

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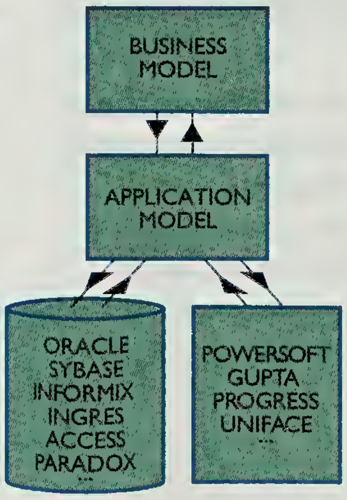

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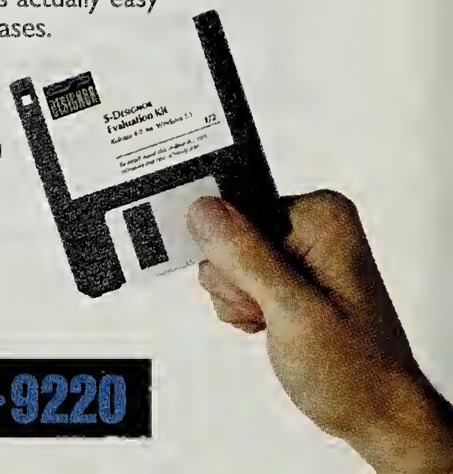

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SDP Technologies, Inc
One Westbrook Center, Suite 805
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EDITOR
Alan Alper

MANAGING EDITOR
Catherine McCrorey

SENIOR EDITOR
Mary Brandel

ART DIRECTOR
Tom Monahan

GRAPHIC DESIGNER
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CONTRIBUTING WRITERS
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Elisabeth Horwitt
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Steven J. Condon
Michelle J. Keyo

COMPUTERWORLD EDITOR IN CHIEF
Bill Laberis

COMPUTERWORLD EDITOR
Paul Gillin

ASSOCIATE PUBLISHER
Jim Hussey

LETTERS TO THE EDITOR:
Computerworld
Client/Server Journal
Box 9171, 375 Cochituate Road
Framingham, Mass. 01701-9171
(508) 879-0700
MCI Mail: Alp: 598-8002
Internet: aalper@cw.com
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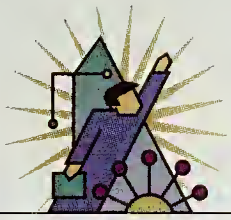

A Tenacious Twenty

EDITOR'S NOTE

When we began this project last August, I experienced major FUD (fear, uncertainty and doubt). What if client/server's benefits were as unmeasurable as industry pundits suggest?

Then there was the intense client/server backlash to consider (i.e., disappointing scalability, hidden costs). And the ambiguity of its definition. And the difficulty of finding people succeeding — let alone excelling — with the technology.

Still, we persevered! Before you are 20 profiles of companies making client/server work as best as humanly and technologically possible. It's not an all-inclusive list but a reflection of what some of the "best and brightest" are doing with distributed systems. The project represents nine months of labor, coordinated between *Computerworld Client/Server Journal* and Cambridge Technology Partners, Inc. (CTP), a Cambridge, Mass., systems integrator.

A few firms — our "Fabulous 5" — have taken client/server systems to new heights. Their systems are making major contributions to revenue generation, profit maximization and/or cost reduction. We gave two firms a "One to Watch" honor. Both are partway through make-or-break projects expected to in one case impact an industry (health care) and in another case remake an entertainment legend.

Our methodology contained equal parts alchemy and intuition. We identified some 300 companies that we believed were doing extraordinary work with client/server and mailed each a 10-page survey. We spoke directly with 144 firms, one-third of which said it was premature to divulge their experiences. From that group, we received 35 completed surveys.

We commissioned a "Blue Ribbon" panel to select our 20 champions: Thornton May, CTP's vice president of research and education; Susan Cohen, president of The Aarons Group; Bill Rabin, managing director of technology research at J. P. Morgan; Dr. Lewis Leeburg, director of IS research at the Anderson School at the University of California at Los Angeles; and myself. We graded entries on where the firm fit on the adoption curve; overall strategy; rapidity of development and deployment; IT's fit with business objectives; and benefits delivered or projected.

To avoid potential bias, CTP excused itself from voting on current/past clients; I did not vote on companies previously profiled in CSJ. The results were fascinating and predictable: Many of our 20 champions see the mainframe as pivotal to their client/server environments. And they see management tools as relatively immature.

There were laments. In hindsight, many said they would not start with mission-critical applications. Many are also revamping parts of their applications with object-oriented technology.

Alas, it's easier to understand things in retrospect. The same goes for this project. We start collecting data on next year's champions tomorrow!

Alan Alper

Blue Ribbon panelists (clockwise from top left): Alan Alper, Susan Cohen, Bill Rabin, Thornton May and Dr. Lewis Leeburg

ILLUSTRATION BY LARRY GOODE; ALL COLORIZING OF PANELISTS' PHOTOGRAPHS BY LARRY GOODE

Clueless They're Not

TOP CLIENT/SERVER IMPLEMENTORS RELY HEAVILY ON KNOWLEDGE AND THE FINE ART OF CONVERSATION

THORNTON MAY

May is vice president of research and education at Cambridge Technology Partners, Inc. in Cambridge, Mass. You can reach him via the Internet at tmay@ctp.com, call him at (617) 374-8263 or send him a fax at (617) 374-8400.

PERSPECTIVE

Cultural commentators have perpetuated the myth that America is a classless society. It is not. The populist strain in the American character has given rise to a variety of films celebrating the exploits of the cerebrally challenged (e.g., *Dumb and Dumber*, *I.Q.* and *Forrest Gump*). While Hollywood may delight in linking virtue with lack of intelligence/knowledge, the workplace does not. Nowhere is this more true than in the client/server sector of the information technology industry.

What separates world-class client/server practitioners from train wrecks waiting to happen is knowledge.

Our "Fabulous 5" companies are fabulous because they know more about client/server along three critical dimensions:

- How to abbreviate the time frame in which value is delivered.
- How to structure/deploy IT resources.
- How to create consensus around the business case of client/server initiatives.

Clearly, we live in a world where overnight isn't fast enough. Each and every exemplary organization in our Top 5 rewrote the book on time to development, time to test and time to rollout. All experimented aggressively with tools, behaviors, metrics and organizational structures that reduced speed.

Fannie Mae, for example, aggressively sought out external, world-class, rapid application development practices and successfully integrated those practices into a consistent systems development methodology.

The really great organizations also recognize that you need diverse expertise to get the most from client/server computing. This requires new organizational arrangements, in which management and staffers collaboratively redesign the IT function. Chase Manhattan Bank has put in place one of the most proactive, comprehensive, standards-sensitive environments in the world today.

Client/server gets its most embarrassing black eye in the area of cost. To the inexperienced, client/server can appear prohibitively expensive to build and bankruptcy-close to support and maintain. But Global Marine obtained world-class smarts at real-world prices by relying on trusted third-party vendors, well-priced executive education and opportunistic forays into the local Houston job market. Such dexterity saved an enormous number of dollars in training and avoided rework.

Even when IS does deliver cost-effective solutions, it has historically been crucified on the cross of nondelivery. IS frequently faces the complaint, "What you built isn't what I wanted!" The Fabulous 5 avoided after-rollout finger-pointing by ensuring that consensus existed before development began and that they had an unambiguous focus on the business case (i.e., how the system adds value to the enterprise).

Our Top 5 understand that value is not some formula-based absolute but the outcome of a complex social interaction. Value is negotiated. In this choice, rich world, value gets defined by means of conversation.

The leading practitioners of client/server highlighted in this special issue would say the best preparation for the future is a rock-solid business case, a track record of unambiguous progress toward mutually agreed-upon business goals in unprecedented time frames and the ability to cost-effectively bring new knowledge into the organization. In this way you avoid the unwieldy predicament of "the dumb" leading "the dumber."

PHOTOGRAPHY BY JACK FOLEY

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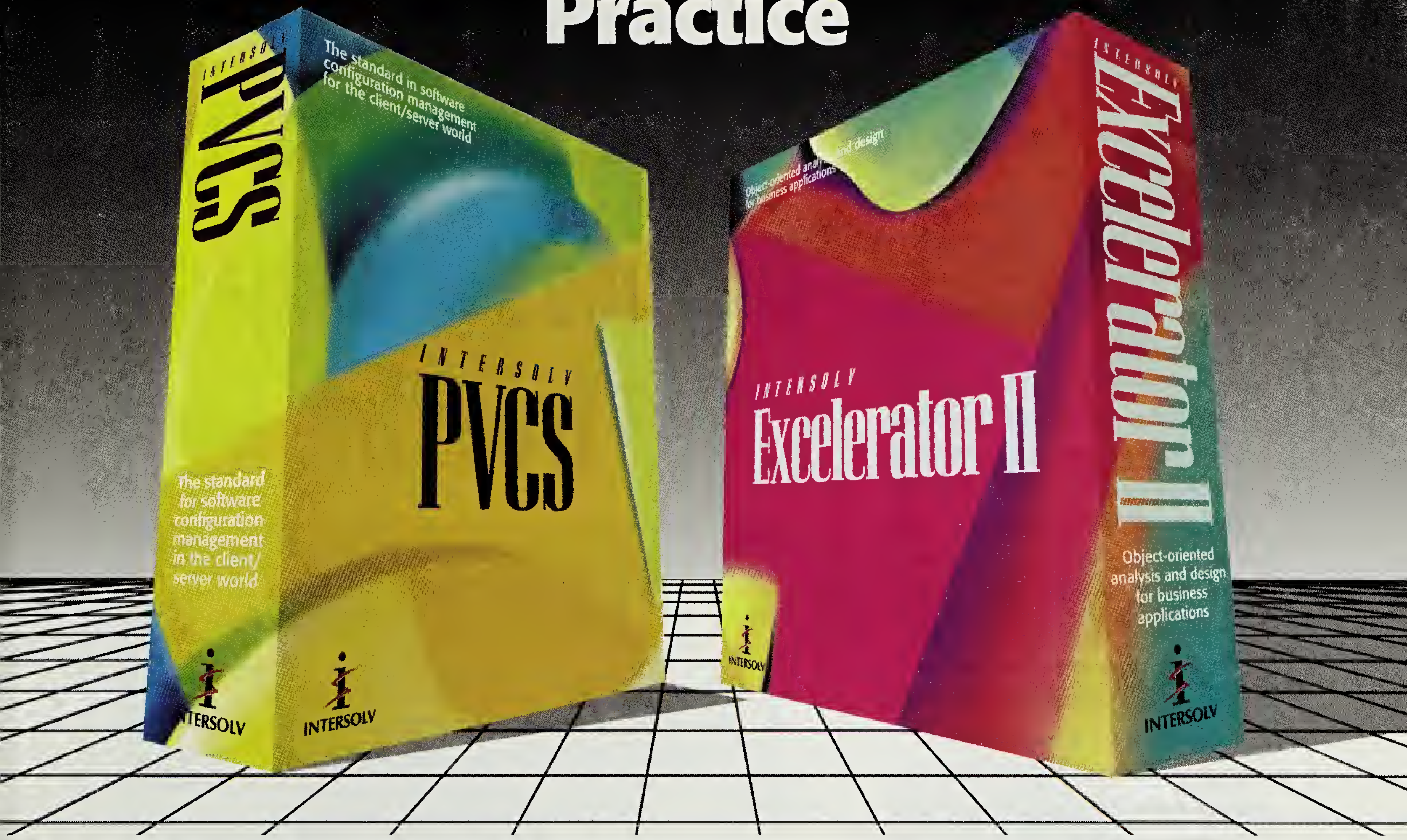
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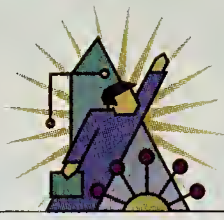


CLIENT/SERVER EXCELLENCE

CLIENT/SERVER CAN STRAIN TECHNOLOGY RESOURCES AND BUSINESS CAPABILITIES, BUT IMPLEMENTORS CLAIM THE GAIN IS WORTH THE PAIN

Distributed Demands True Grit

One look at our Top 20 reveals some key findings: Distributed computing takes time, money, sweat and grit to perfect. But if done right, it can yield huge financial and operational returns.

At no time was the difficulty more poignant than in the pioneering years of 1990 to 1992, when many of these elite firms, particularly our "Fabulous Five," were starting implementation. But they say the pain was worth it: The extensive experience has enabled many of them to successfully refine their strategies along the way.

On average, our Top 20 are working on large applications (averaging 1,373 users) developed in just over a year and expected to reap about $15.8 million in cost benefits over their lifetime. These apps are almost evenly split among mission-critical (enterprisewide, bloodline), strategic (creating/maintaining competitive advantage) and operational (tactical or administrative) areas.

The client/server systems took an average of just less than 10 months to deploy and should have an average useful life of 4.3 years — far lower than the eventual life span of the applications they replace.

Not surprisingly, functional departments are leading the way to client/server at our Top 20 companies. In fact, some heads of technology insist they will not start a project unless a member of the business community is on the team.

But client/server's inexorable move into the mainstream is straining IS' capacity to deliver. To fill the gap, the Top 20 are spending 30% of their client/server project resources on integrators and consultants.

Such spending is contributing to the rise in client/server expenditures as a percentage of our Top 20's IT budgets.

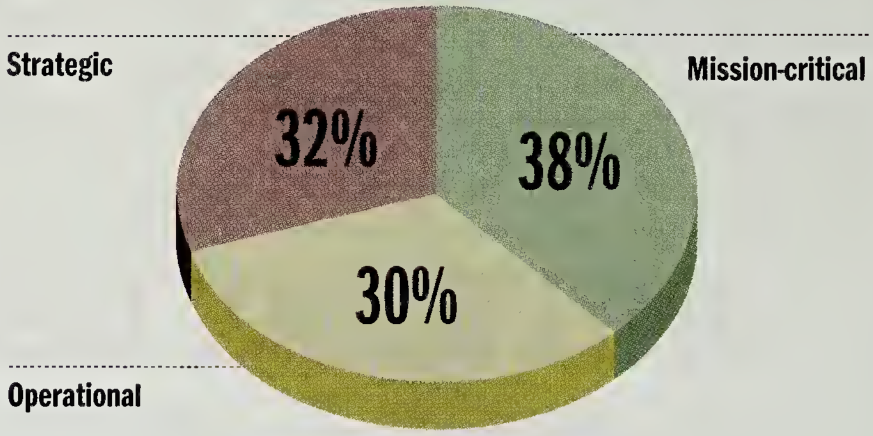
In all charts, "application development" refers to off-the-shelf applications, plus deployment.

Tale of the tape

The systems built by our Top 20 client/server champions were mainly ambitious ones, requiring a large investment in time and money and reaching over 1,000 users

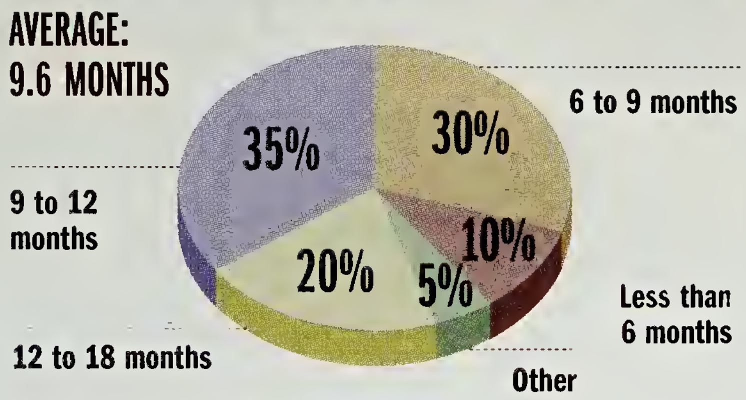
Development time	**1.2 years**
Number of end users	**1,373**
Projected annual return	**$15.8M**

Application types fell fairly evenly into three categories



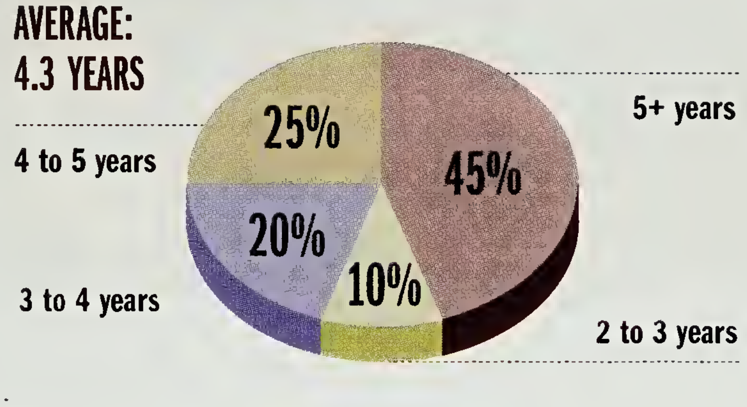
Though client/server applications take minimal time to launch . . .

IMPLEMENTATION TIME FOR CLIENT/SERVER APPLICATIONS



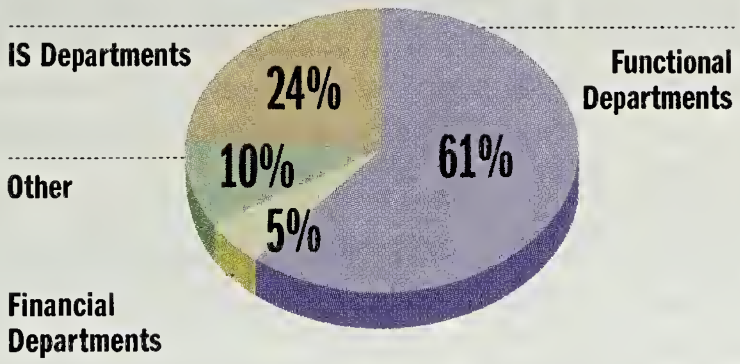
. . . most companies expect them to remain useful for more than five years

EXPECTED LIFESPAN OF CLIENT/SERVER APPLICATIONS



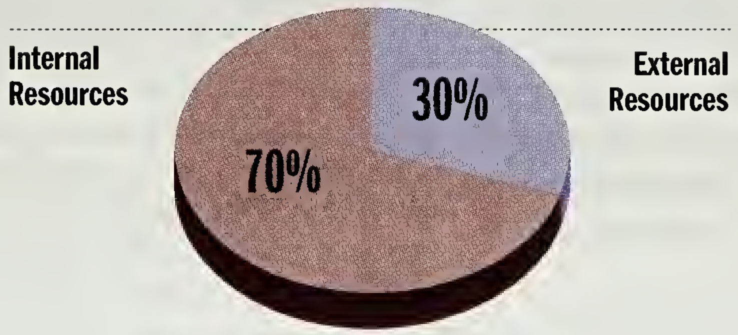
The majority of client/server projects originate in functional departments . . .

GROUPS INITIATING CLIENT/SERVER DEVELOPMENT EFFORTS



. . . and require some assistance from third-party integrators and consultants

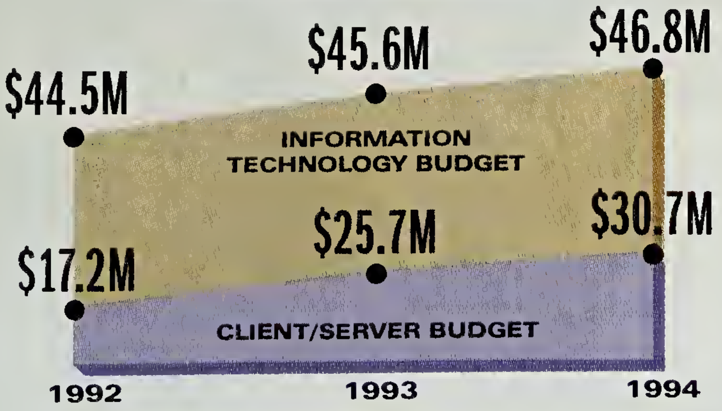
SOURCE OF CLIENT/SERVER CONSULTING RESOURCES



(PERCENT OF CONSULTING COSTS)

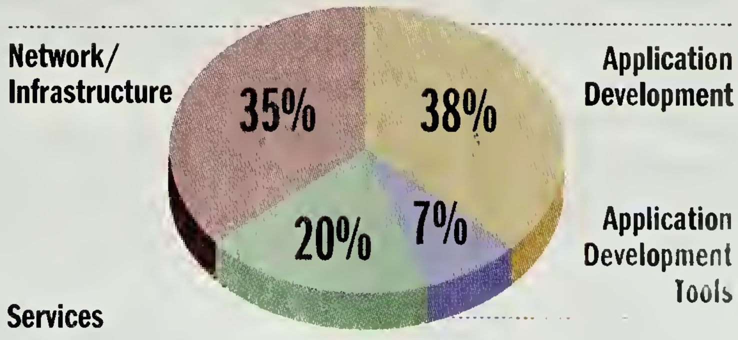
Though IT budgets remain relatively flat, client/server spending continues on average to grow . . .

IT AND CLIENT/SERVER BUDGETS



. . . with the most money spent on implementing infrastructure and deploying applications

CLIENT/SERVER BUDGET ALLOCATIONS



VITAL STATISTICS

Baltimore Gas & Electric Co.

Baltimore

MISSION

To meet the needs of fast regulatory changes and deregulation by developing systems that enable quick development of new services and programs.

APPLICATION PROFILE

Clients, using Gupta Corp.'s SQL Windows and Microsoft's Office, interact with an Oracle database on a Digital Equipment Corp. Ultrix-based 5900 for sales and customer information. The system interfaces with IBM DB2 financial data via a gateway.

1994 REVENUE

$635.2 million

1994 IS BUDGET

$40 million to $50 million

1994 CLIENT/SERVER EXPENDITURES

$30 million to $40 million

Application development: 30%
Networks and infrastructure: 20%
Professional services: 40%
Development tools: 10%

BALTIMORE GAS & ELECTRIC ENERGIZES ITS REGULATION, CONSERVATION AND MARKETING SYSTEMS

Gassed Up To Compete

BY CHERYL GERBER

It was fast-changing energy-conservation regulatory requirements that first compelled Baltimore Gas & Electric Co. in 1991 to move into the world of client/server. Very quickly, though, a very different market force propelled the utility into a hotbed of competition: deregulation.

Fortunately for BG&E, both events posed similar demands: quick development of targeted customer programs. In a world where customers can potentially purchase their power from any utility in the U.S., "flexibility is the key," says Dennis Hoover, senior planning analyst at BG&E. "We have to respond very quickly to the industry, to competitors, to customers."

So BG&E expanded its then-in-progress client/server regulatory requirements system into a marketing data tracking system. Two hundred marketing employees now use Windows clients to communicate with a back-end Oracle Corp. database and with DB2 on a 3090 mainframe to track customer inquiries, contact history and installation progress. They can also trade information with other departments such as credit/collections over a campuswide wide-area network. The department runs a piece of the marketing system and can interact with the Oracle database to process rebates or issue credit.

The system's benefits are difficult to quantify because the division's requirements are still evolving, Hoover says. But BG&E knows for sure that using standard client/server components and rapid application development techniques kept its implementation costs low.

And since that installation, BG&E has never looked back. It is finishing up an Oracle Financials implementation, and by the end of this year, the industrial and commercial billing department will have a three-tier system developed with Andersen Consulting and its Foundation for Cooperative Processing tool kit. The system, which will run on DB2 and be accessed via OS/2 gateway servers, will provide flexible billing schedules and better usage tracking for the largest customers.

For instance, a customer "might want us to bill them differently for the power they use in different times of the month," Hoover says.

Next, Hoover says, BG&E would like to move further into the world of objects and component reusability. Already, BG&E developers use class libraries, and the utility is implementing Microsoft Corp.'s OLE 2.0 technology and closely tracking the progress of the Object Management Group's Common Object Request Broker Architecture. "The focus is how to integrate various products on the desktop," Hoover says. "We want to tie them all together into a solution and not start from scratch each time."

Gerber is a Kingston, N.Y.-based freelance writer specializing in information technology.

BG&E's client/server team includes (from left): Bonnie Payne, Chrisann Scott, Maria Cavallaro and Dennis Hoover ▼

PHOTOGRAPHY BY ROBERT BURKE

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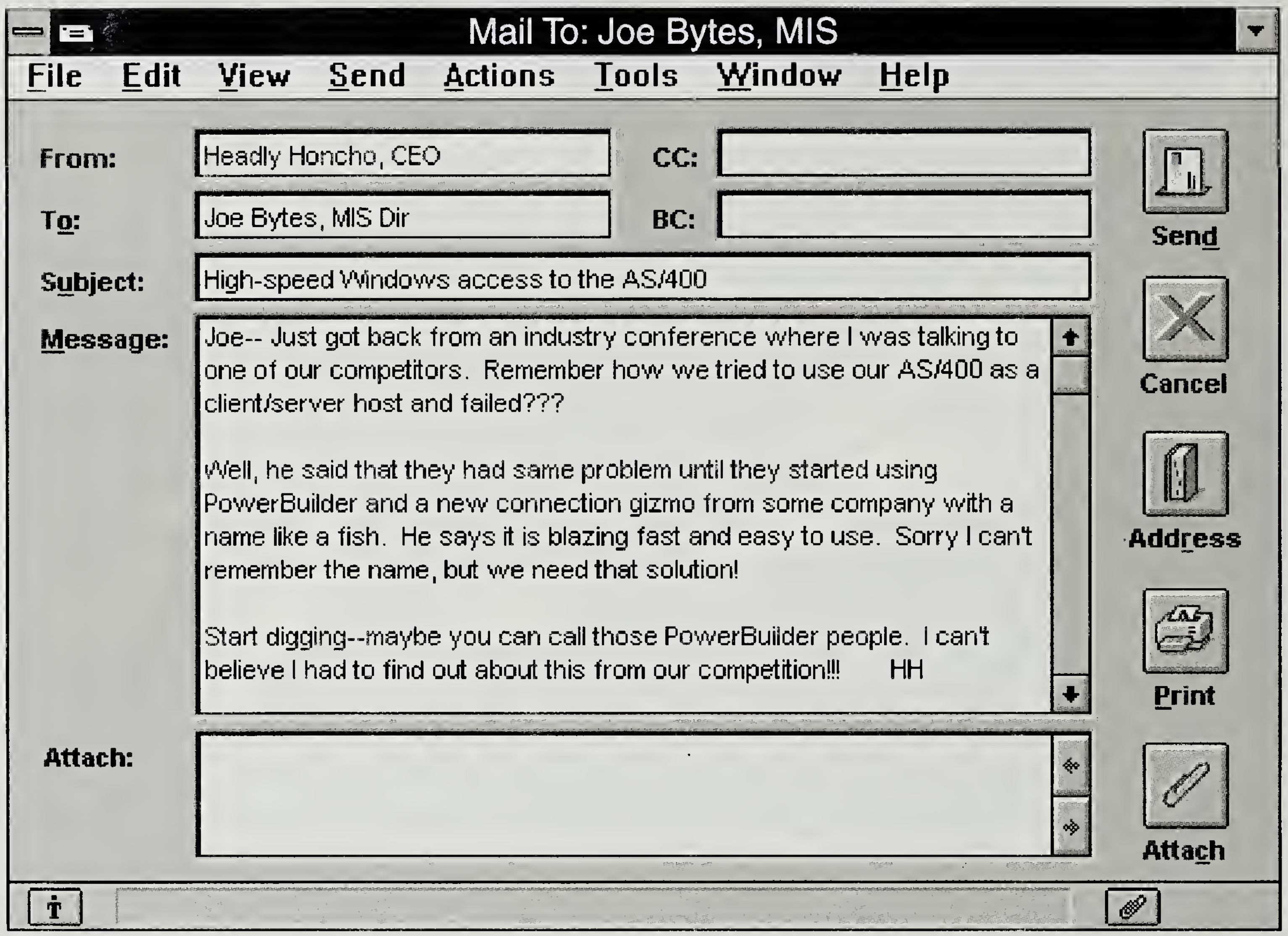

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To: Joe Bytes, MIS Dir

CC:

BC:

Subject: High-speed Windows access to the AS/400

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IN A STAGNANT BANKING MARKET, BANK OF BOSTON PROVIDES HIGHER EQUITY RETURNS

A Beautiful Relationship

BY LINDA WILSON

In the old days, when Lisa Marshall was planning a customer visit, she'd call dozens of her Bank of Boston Corp. colleagues to find out exactly what services the customer had already purchased from the 210-year-old bank.

Not anymore. With a few keystrokes, Marshall can tap into a history of every contact the bank has ever made with her clients. That kind of data is invaluable to Marshall and the other 499 relationship managers, who not only oversee customer credit needs but also arrange introductions to other bank employees specializing in fee-based services.

Relationship managers earn commissions on referrals that wind up as sales. "It is very hard to keep track when you're calling on 50 companies," Marshall says.

That's precisely why the $43.5 billion asset bank in November 1993 rolled out Market Manager, a Microsoft Corp. Windows NT 3.5-based SQL Server database of data on 100,000 customers and sales prospects.

Market Manager also ranks customers according to actual and potential profitability and measures sales increases by customer, product and market segment. "It saves a tremendous amount of time," Marshall says.

And makes a tremendous amount of money. In 1994, the bank attributed $700,000 in profits and $200,000 in reduced administrative costs to Market Manager.

Cutthroat competition in a stagnant market is forcing banks to work smarter to cover a bigger share of large corporate clients' financial needs, notes William Bradway, an analyst at Tower Group in Wellesley, Mass.

Banks are also competing for investors' favor, primarily through improvements to return on equity. "You're not going to get more people. The real challenge is to get a better yield with the resources you have," says Allan MacDonald, director of market and sales information for the wholesale bank group.

Another system helping the bank strengthen return on equity is Risk Adjusted Return on Capital (RAROC). This 15-month effort launched in 1993 measures the risk associated with potential loans and then calculates return on capital for pricing scenarios. "It tells us what deals to get involved with and what not to get involved with," says Richard Hart, senior information systems manager. "It is the key to our lending future."

Market Manager and RAROC reflect the bank's philosophy of teaming technologists with end users. With Market Manager, for example, developers spent 600 hours working with relationship managers.

According to MacDonald, "We designed it around the people who keep in touch with customers on a daily basis."

Wilson is a freelance writer in Glen Ellyn, Ill.

VITAL STATISTICS

Bank of Boston Corp.

Boston

MISSION
To maximize revenue from the client base by enabling employees to better manage and analyze customer relationships and financial data.

APPLICATION PROFILE
An IBM 3090 application feeds Microsoft SQL Server with financial and customer data. SQL Server sits on a Compaq Computer Corp. ProLiant 4000 running Windows NT 3.5 and is accessed by C++, Visual Basic or Powersoft's PowerBuilder programs on Windows clients.

1994 REVENUE
$43.5 billion

1994 IS BUDGET
$60 million-plus

1994 CLIENT/SERVER EXPENDITURES
$20 to $30 million

Application development: 55%
Networks and infrastructure: 30%
Professional services: 10%
Development tools: 5%

Claire McCarthy (left), a systems developer, worked with relationship manager Lisa Marshall and Tom Farley (center) on Market Manager. Jim Eardley (right), a product manager in corporate marketing, also contributed to system enhancements. ➡

PHOTOGRAPHY BY MARK THAYER

VITAL STATISTICS

Bay State Gas

Westboro, Mass.

MISSION

To replace inflexible mainframe systems with a distributed computing environment that offers a more cost-effective, strategic way to manage corporate assets, capital projects and customer service.

APPLICATION PROFILE

Work order management system was built with Progress Version 7 and runs on a Progress RDBMS on an HP 9000/I70. NetWare-linked Windows PC users can access work order data and pull down Lawson-based integrated apps data over a TCP/IP network.

1994 REVENUE

$450 million

1994 IS BUDGET

$8.5 million

1994 CLIENT/SERVER EXPENDITURES

$3.5 million

Application development: 50%
Networks and infrastructure: 25%
Professional services: 17%
Development tools: 8%

BAY STATE GAS RESPONDS TO NEWLY COMPETITIVE INDUSTRY WITH COST-CUTTING WORK ORDER SYSTEM

Keeping High Costs At Bay

BY ALAN ALPER

Bay State Gas Co. realized that to prosper in a deregulated world, it would have to put its money where its assets were.

So last year, the New England utility began building a client/server system to track every penny it spent on the $30 million worth of infrastructure projects it performs annually. Out went a Unisys Corp. A12-based application. In came a Unix-based work order management system built around a Progress Corp. relational database running on a Hewlett-Packard Co. HP-UX server.

The system was the initial salvo in Bay State's plan to jettison its mainframe by year's end. The utility recently installed a gas portfolio management system and is putting the final touches on a customer service system that will give sales, service, billing and credit personnel a unified view of every customer.

With the new work order system, Bay State project managers, accountants and engineers can monitor and analyze in near real time the status of any of the 20,000 to 30,000 projects they perform annually.

"The key thing is it gives us accurate, timely cost data," notes John Doucette, Bay State's vice president of corporate services. The system is expected to help cut construction costs by $2 million to $3 million annually.

Here's how it works: a field salesperson works with prospects to determine service needs. Cost estimates are keyed into a Windows work order form and stored on the database. Crew time and material costs are recorded daily. Financial data from the work order system and Lawson Software, Inc. payroll, payables and inventory management modules is then fed into an accounting system to do cost analysis. "We can find out what it's costing per foot to put steel pipe in the ground and then find ways to do the same work for less money," Doucette says.

Analyzed data flows into a fixed asset management system on a separate HP server.

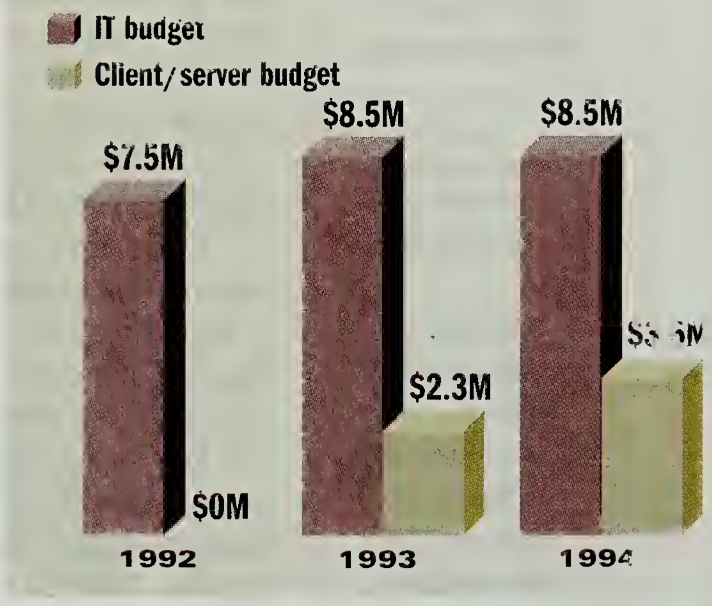
The work order system is used by 50-plus Novell, Inc. NetWare-attached Windows users at six company locations connected over a TCP/IP wide-area network running over a T1 backbone. "I like the timeliness of reporting," says Mary Pasquarosa, supervisor in the utility's planning department. "I can run many reports at my desk at an instant's notice in a multitude of ways."

Bay State plans to give laptop-wielding contractors and field personnel remote wireless access via RAM Mobile Data two-way communications services.

Alper is editor of Computerworld Client/Server Journal.

Distributing the spending

While IT expenditures have remained flat at Bay State Gas, client/server spending is on a fast ramp



Source: CSJ Survey

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VITAL STATISTICS

The Chase Manhattan Bank NA

New York

MISSION
To improve service to bank card clients and sharpen marketing analysis tools.

APPLICATION PROFILE
IBM DB2-based data is downloaded to Microsoft's SQL Server and accessed by reps through an Easel GUI. Sigma Imaging Systems' image/workflow software steps reps through customer service processes. Marketing analysts query Sybase Navigation Server, which sits on an AT&T GIS 3600 MPP system.

1994 REVENUE
$114 billion in assets

1994 IS BUDGET
$60 million-plus

1994 CLIENT/SERVER EXPENDITURES
$30 million to $40 million

Application development: 45%
Networks and infrastructure: 45%
Professional services: 8%
Development tools: 2%

CHASE OVERHAULS CREDIT-CARD BUSINESS; REAPS $4.7M IN SAVINGS, $29.9M IN REVENUE IN FIVE YEARS

Distributed Systems Earn Extra Credit

Abbreviations and codes may have been convenient for the computer systems at The Chase Manhattan Bank NA four years ago. But they looked more like hieroglyphics to credit-card customer service representatives attempting to decipher account information on their screens.

Simply changing a cardholder's name and address or altering a payment schedule was cumbersome and error-prone on the old terminal/host system. Then there was training. New employees took six weeks to get up and running, and even then they had to work under direct supervision for six more months. After all that, reps would often leave after little more than a year.

FABULOUS 5

This is not how you want one of your most strategic departments to work. At Chase, the credit-card business accounts for "a substantial portion" of the bank profits in what is an extremely competitive market, says Leslie Singer, vice president of bank card services.

So in 1992, Chase took its first steps toward client/server with a $6.6 million workflow-based system that speaks English. In 12 months, the 1,200-plus customer service representatives were able to focus on serving and marketing to cardholders instead of decoding information.

Workflow scripts written in Sigma Imaging Systems, Inc.'s imaging/workflow environment provide a guided tour to the account information, which is downloaded to a Microsoft Corp. SQL Server database via an MDI gateway from 25 DB2-based tables on the mainframe. Users query the database using a graphical user interface (GUI) written in Easel Corp.'s Easel.

If a cardholder calls to request a higher credit limit, for example, workflow scripting will guide the rep through each question to ask and the approvals he must obtain. The appropriate forms and letters are generated electronically, allowing him to complete the transaction with fill-in-the-blank ease.

"In the old system, [representatives] would have to know what to ask, what the codes meant and how to enter the transaction," Singer explains.

Since the 1993 implementation, error rates have plummeted 50% to 90%, training takes just two weeks, new employees are out of the nest in six weeks and they stay at Chase for an average of 18 months. In addition, the application has subtracted $4.7 million in annual labor costs from Chase's expense column.

Revamping customer service is just part of Chase's move into client/server. In fact, the bank estimates that half of its new applications will be built in a distributed environment. For instance, the bank card marketing group needed better analysis tools and so it migrated to a massively parallel processor running Sybase, Inc.'s Navigation Server to uncover new marketing trends.

The $9 million system is expected to reap the bank $29.9 million in five years.

BY CANDEE WILDE

More recently, a customer management system developed in Smalltalk has been enabling salespeople in London and New York to maintain detailed client profiles in a Sybase database on a Sun server.

Chase's customer service system is "one that does what ... a good client/server process does: brings together information from disparate systems and delivers it in a user-friendly fashion," says Bill Renshaw, principal and practice leader for IBM's banking and financial services group.

One of the most impressive aspects of the application, Renshaw says, was the degree to which customer service reps quickly embraced it. In fact, Chase developers worked closely with the reps, particularly on interface design. "However elegant the GUI is, if it doesn't meet the business purposes, it won't be used," says Jonathan Vaughan, vice president of applied technology.

And the developers had to achieve a tricky balance, Vaughan says: Strive for quality but also "do it quickly and set boundaries around when to quit. That's a key issue."

Even then, the interface did not catch on immediately among all veteran customer service reps, some of whom had trouble shifting to the new system, Singer says. Newer employees, on the other hand, have found it "an incredible leap forward."

Vaughan attributes at least some of the project's success to Chase's checks-and-balances approach to technology planning and implementation. Each business area has its own developers and is responsible for setting its own business priorities and paying for new information systems.

Then there is the corporate technology group (Vaughan's area), which coordinates technology and business priorities for major projects.

Third, Chase has two technical service centers — one in Bournemouth, England, and another in New York — that act as internal outsourcers, Vaughan says.

Vaughan's corporate team, outside consultants, developers in the credit-card IS group and users themselves all had a hand in designing the customer service system. Most of the application logic was written in Micro Focus, Inc.'s Cobol II, with the remainder written in C. The part of the application that deals with screen navigation and ordering data from the host is being rewritten in C++, which will allow transactions to run on servers instead of on the client. "It also gives us a level of insulation from the front-end tool," Vaughan says.

Because this was an early inroad into client/server for Chase, Vaughan says, the focus was on building "an extensible platform" that could be reused rather than being specific to customer service requirements.

One of the most important lessons was the importance of component design, in which the software for various functions is layered and can be changed without affecting the entire application. A component approach also allows parts of the design to be standardized and used for future projects, Vaughan says.

Chase is already at work on the second iteration of the credit-card customer service application, Singer says. As marketing efforts become more targeted, new imaging capabilities will prompt representatives to call up an image of a specific marketing brochure that a customer has received in the mail.

"We send out many different things tailored to individual customers, so it is almost impossible for the representative to have that knowledge in his head, or even at his desk in the form of written material," Singer says.

Wilde is a freelance writer in Easton, Conn.

PHOTOGRAPHY BY JACK FOLEY

PANELIST VIEW

Susan Cohen

President,
The Aarons Group,
Marblehead, Mass.

"Chase has . . . established client/server standards that ensure global interoperability, but business units enjoy freedom of technology choice. How? Through standards that are guidelines, not handcuffs, and by educating users. 1995 savings alone have exceeded original client/server investment costs. Not many investments pay back that quickly."

Leslie Singer and Jonathan Vaughan say Chase's credit-card revamp would not have succeeded if business and technology groups were not in sync

PHOTOGRAPHY BY
EDWARD SANTALONE

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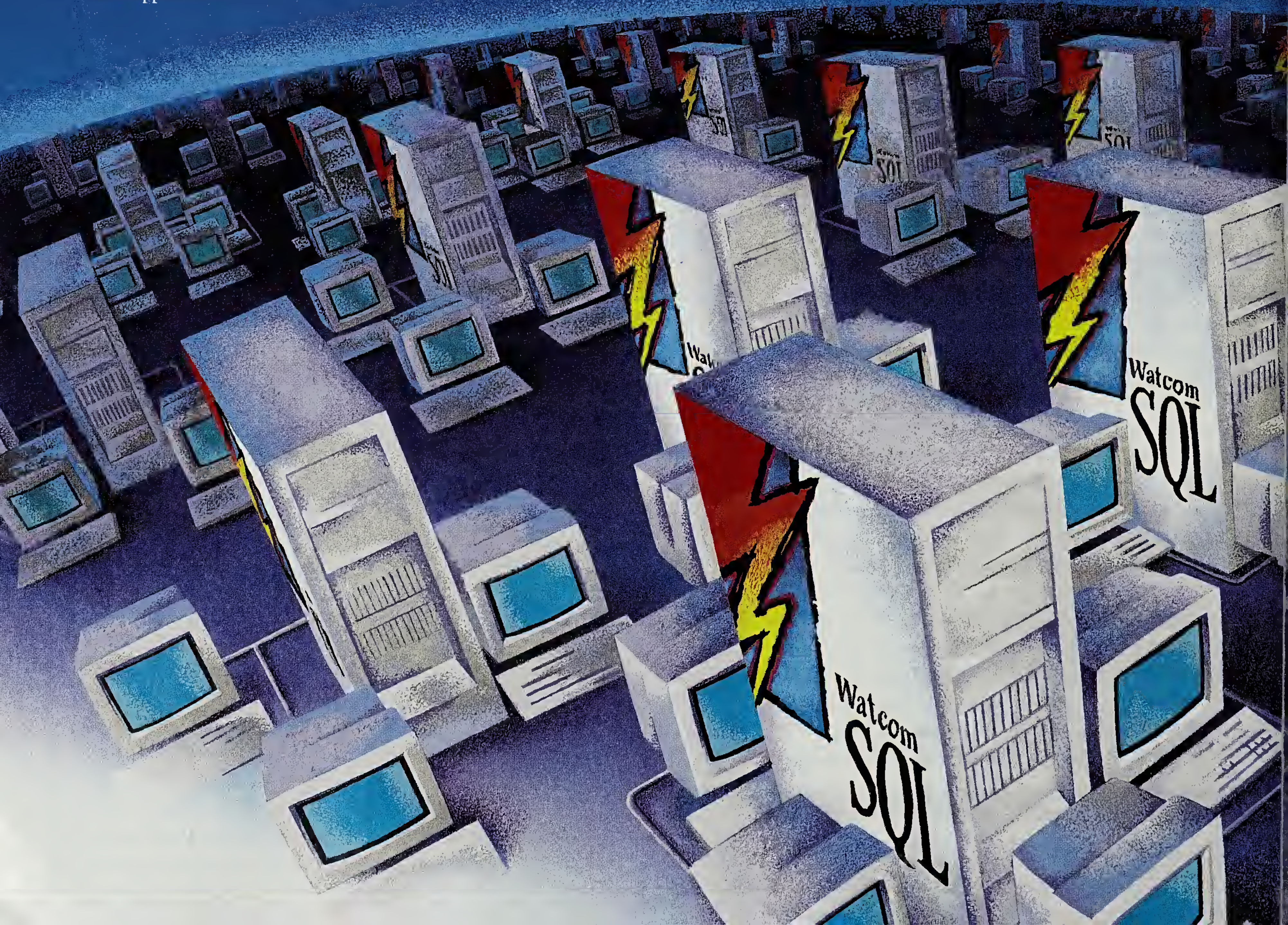

VITAL STATISTICS

Chrysler Corp.

Detroit

MISSION
To arm customer service reps with answers to customer questions and complaints through imaging, workflow, better data access and technology standardization.

APPLICATION PROFILE
A Sun SPARCserver 2000-based imaging system from Excalibur Technologies works with a mainframe-based data collection and workflow system. A 40G-byte Sybase, Inc. database contains data and images.

1994 REVENUE
$52.2 billion

1994 IS BUDGET
$60 million-plus

1994 CLIENT/SERVER EXPENDITURES
$40 million to $50 million

Application development: 25%
Networks and infrastructure: 50%
Professional services: 20%
Development tools: 5%

CHRYSLER SERVICE REPRESENTATIVES HAVE CUSTOMER INFORMATION AT THEIR FINGERTIPS

Making It In Motown

BY STEVE ALEXANDER

Heavy investment in new car development helped Chrysler Corp. reclaim its membership in the "Big Three." Heavy spending of between $40 million and $50 million on 75 client/server projects in two years is making the Detroit automaker even more competitive.

Key to the plan is improved customer relations. Four years ago, much of the useful information at the corporatewide customer service center was hidden in filing cabinets. And dealing with consumer questions and complaints wasn't going to get any easier for Chrysler, with 1 million calls per year.

What service representatives at the Highland Park, Mich.-based center needed was quicker access to timely, specific consumer data. So 1½ years ago (after two years of planning), the automaker placed a Sun Microsystems, Inc.-based imaging system in front of the mainframe files detailing customer complaints. Consumer letters and repair receipts are now scanned into a 40G-byte database, and a workflow system secures integration between the two repositories.

If a customer calls to protest a repair bill, for instance, service representatives record details of the call in a mainframe file. If the rep needs additional information, he can punch in the vehicle identification number, and a SQL request travels to the mainframe and retrieves ownership information as well as repairs, warranties and service contract data.

Any paperwork the consumer has sent to Chrysler is almost instantly available via the image retrieval system. Chrysler is just now completing a client/server document library that will give 160 customer center employees quick access to owner's manuals, technical bulletins and recall notices.

"Now we can get everything in one spot," says Paul Hsu, distributed systems manager in Chrysler's strategic planning department.

In the future, Chrysler may add data analysis capabilities. For instance, it could download mainframe-based complaint reports to a server to determine the frequency of recurring problems.

Chrysler gets high marks for its customer center from Technical Assistance Research Programs, Inc., an Arlington, Va., consultancy. "Chrysler has come a long way with its case-tracking software program and the integration of different databases," says Jeff Maszal, senior analyst. "It is exceptionally competitive with the other auto companies."

Chrysler is also using client/server to simplify payroll at 38 plants, saving $2 million in the first year.

"Cutting the time it takes to do things is very important," Hsu says. "We're trying to create a client/server model so that similar applications can duplicate it."

Alexander is a Minneapolis-based journalist who reports on technology.

Chrysler is pumping millions of dollars into client/server, largely to improve customer service. Pictured below is its customer center team.

PHOTOGRAPHY BY
MICHELLE ANDONIAN

VITAL STATISTICS

Connecticut Mutual Life Insurance Co.

Hartford, Conn.

MISSION
To eradicate paper shuffling with an image/workflow system and enterprisewide E-mail and electronic forms systems, thereby speeding customer responsiveness and decreasing underwriting costs.

APPLICATION PROFILE
IBM RS/6000-based system built with FileNet Workflo tools and Sybase SQL Server, with an MDI gateway to IBM DB2/CICS data. DCE is stated direction for interoperability.

1994 REVENUE
$1.4 billion

1994 IS BUDGET
$40 million to $50 million

1994 CLIENT/SERVER EXPENDITURES
Less than $10 million

Application development: 45%
Networks and infrastructure: 40%
Professional services: 10%
Development tools: 5%

CONNECTICUT MUTUAL ATTACKS PAPER-BASED INEFFICIENCIES WITH CLIENT/SERVER WORKFLOW

No Pulp Here

BY CANDEE WILDE

Paper is a necessary evil at most insurance companies. But at Connecticut Mutual Life Insurance Co., mail room employees are about the only ones who still touch the stuff. And that's only to sort and scan letters into the Hartford, Conn.-based company's $6.5 million client/server-based imaging and workflow system.

This was not the case four years ago. At that time, a relatively simple transaction, such as processing a beneficiary change, involved a lot of paper shuffling. Customer requests were backed up for weeks.

In 1991, a cross-functional team of executives, led by the then-president of customer services, realized it was high time for a reengineering move. That same year, a 25-person client/server workflow pilot was begun, and today, 500 service representatives electronically receive customer letters via an image/workflow server. The documents are linked with customer data and placed in the representative's computerized "in box."

Reps are armed with enough on-line information to respond to callers in one telephone call with limited handoffs. The savings have been impressive: a 35% return on investment in two years and a $4 million reduction in annual operating costs. Soft benefits include improved policy retention, says Roger Thibodeau, assistant vice president of client/server engineering.

The firm has also introduced workflow to the 120-person underwriting department, complete with electronic data interchange links to third-party providers, to the tune of $1.5 million in savings. In addition, all 1,500 employees are hooked into an enterprisewide electronic forms and electronic-mail system.

The workflow project grew quickly from the original pilot within the check services department. "The urgency was business-driven technology change," Thibodeau says. For instance, it took employees just four months to learn about client/server, scan 30,000 documents, write the workflow software and deploy the pilot system. Two weeks later, a five-week backlog of customer requests was eliminated, and the department was soon reduced from 25 to 15 people.

While the aggressive pace helped the insurer meet predicted return on investment, Thibodeau says it also caused some design grief. "Probably had we taken more time to craft the middleware we needed, it would have been a better model," he explains. For instance, services within the application are tightly coupled, so if one goes down, "the entire application comes to a screeching halt."

Therefore, Connecticut Mutual is developing new applications using Distributed Service Request Architecture, which enables part of an application to continue to function even when one service crashes.

Wilde is a freelance writer in Easton, Conn.

An aggressive pace helped Connecticut Mutual meet its return on investment, Roger Thibodeau says ➡

PHOTOGRAPHY BY JOHN RAE

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BY 'SURROUNDING THE MAINFRAME,' FANNIE MAE SPEEDS MORTGAGE ORIGINATIONS

Hourly Loan Approvals For $1,000 Less

BY WILLIE SCHATZ

Five years ago, Federal National Mortgage Association (Fannie Mae) was technologically a decade behind other lending institutions. And it showed.

The 57-year-old congressionally chartered corporation, which provides mortgage financing for low-, moderate- and middle-income buyers, counted on mainframes and minicomputers that weren't even close to pulling their weight. Fragmented, stand-alone PCs were incapable of delivering the right information at the right time to key knowledge workers.

"Our people were spending 80% of their time searching for data and 20% analyzing what they eventually found," recalls William Kelvie, Fannie Mae's executive vice president and chief information officer.

FABULOUS 5

Those numbers did not play well in Peoria or in Congress, and particularly not with Fannie Mae stockholders. Nor did the continual market share losses to archrival The Federal Home Loan Mortgage Association (Freddie Mac). It was chillingly obvious to Kelvie and Franklin Raines, the agency's vice chairman and information systems guru, that the $660 billion asset corporation needed a client/server database management system to perform queries and detailed analytics.

They also knew client/server would provide user friendliness and the ability to grind through legacy data.

"But we'd already invested more than $100 million in the [MVS, CA-IDMS, Cobol-based] IBM 3090," Kelvie explains.

Fannie Mae was undeterred. It began building a client/server infrastructure to surround its mainframes, standardizing on Sun Microsystems, Inc. SPARC-based servers and Sybase, Inc. databases.

Then, in 1993, came the defining moment: the rollout of a client/server application suite that fast-forwards the intrinsically slow, paper-intensive mortgage origination process [CSJ, February 1994].

Loan originators now have Windows-based tools with which to assemble application data, perform credit checks and match available mortgage rates to the homeowner's balance sheet from applications and data residing on Sun/Sybase servers. Called MornetPlus, the application suite is powering Fannie Mae's drive to reduce borrowers' costs by $1,000 per application.

Also innovative was the move to automate the process beyond its own enterprise. Underwriting institutions, which finance Fannie Mae loans, are given access to an expert system that enables them to quickly assess a loan request. The underwriting bank then sends Fannie Mae a thumbs-up or thumbs-down via a leased or dedicated line.

This new technological muscle enabled Fannie Mae last May to reduce to one hour the house-closing loan approval process. The paperwork still requires 30 days, but Kelvie anticipates shortly compressing that waiting time to less than five days. Moreover, MornetPlus is expected to add several million dol-

VITAL STATISTICS

Federal National Mortgage Association

Washington

MISSION

To accelerate mortgage origination by permitting inter- and extra-enterprise data sharing. Fannie Mae encourages reuse through object-oriented technology and is migrating legacy applications off host platforms where it makes business sense.

APPLICATION PROFILE

For mortgage origination, Windows-based notebook or desktop clients built with Visual C++ access Sybase/Sun servers over a TCP/IP network. Underwriters use the Art Enterprise expert system to assess loans.

1994 REVENUE

$4.05 billion

1994 IS BUDGET

$60 million-plus

1994 CLIENT/SERVER EXPENDITURES

$60 million-plus

lars this year to the rest of Fannie Mae's business.

Kelvie also credits MornetPlus and other client/server applications with reducing by an average of 40% the time it takes to perform mission-critical underwriting tasks as well as the cost of completing them.

The client/server configuration provides better problem-solving tools, works more easily with what Kelvie calls "the killer DB2" database and can move much faster than the hierarchical mainframe database. The new environment has also enabled the IS staff to deliver in eight months an image-based document custody facility that has consolidated five regional data vaults into one and drastically reduced customer service cycle times and internal costs.

Keeping costs in check, however, could be accomplished only if Fannie Mae officials could access up-to-the-minute rates data.

"With our mainframe system, every time the open market price for mortgages changed or the interest rate fluctuated, it took us 20 minutes to get the new price into the market," says Donna Callejon, the agency's senior vice president of marketing and MIS. "That wasn't dynamic enough to keep up with the [mortgage-backed securities] market. So the other guys — Freddie Mac and other mortgage lenders — got more business than we did."

To modernize its pricing, Callejon's business unit got together in the fall of 1991 with Kelvie's MIS group, and the two devised Live Pricing, a client/server application that gives Fannie Mae marketing personnel real-time, on-line access to mortgage rate prices and enables them to clinch deals with mortgage lenders within 60 seconds.

"It was a raving success immediately," Callejon says. "It was also the first real partnership between a business unit and the technology folks."

Callejon's crew now uses the client/server system to create 90% of its products, such as fixed-rate and adjustable-rate mortgages. That process has yielded dramatically reduced error rates and cleaner deliveries of the myriad parts of the loan approval process. With fewer errors in the contract information procedure, loans are processed much more efficiently and effectively.

Callejon's folks must be doing something right. Since Live Pricing hit the street, Fannie Mae has supplanted Freddie Mac as the on-line mortgage market share leader. No more spending too much time, money and intellectual capital for a lousy return on investment. "We wanted to leverage our marketing and technology skills to establish a more effective relationship with our customers and to become more competitive," Callejon explains.

Riding the client/server wave enabled Fannie Mae to do more business in 1992 and 1993 than in the previous three decades combined, while shrinking the number of employees in the transaction processing parts of the business. Other client/server paybacks in the past four years include more than 100 new applications delivered and 5,400 lenders on-line over the original mainframe-based Mornet and MornetPlus.

Given Fannie Mae's phenomenal success, extending client/server across the enterprise should be a no-brainer. But, Kelvie cautions, success did not come as easily as it appears.

"If I were a company now looking at client/server, I wouldn't put my most mission-critical business applications on it the first time out," he warns. "I'd try to find a good application with significant business value but not one so mission-critical."

Schatz is a freelance writer in Washington.

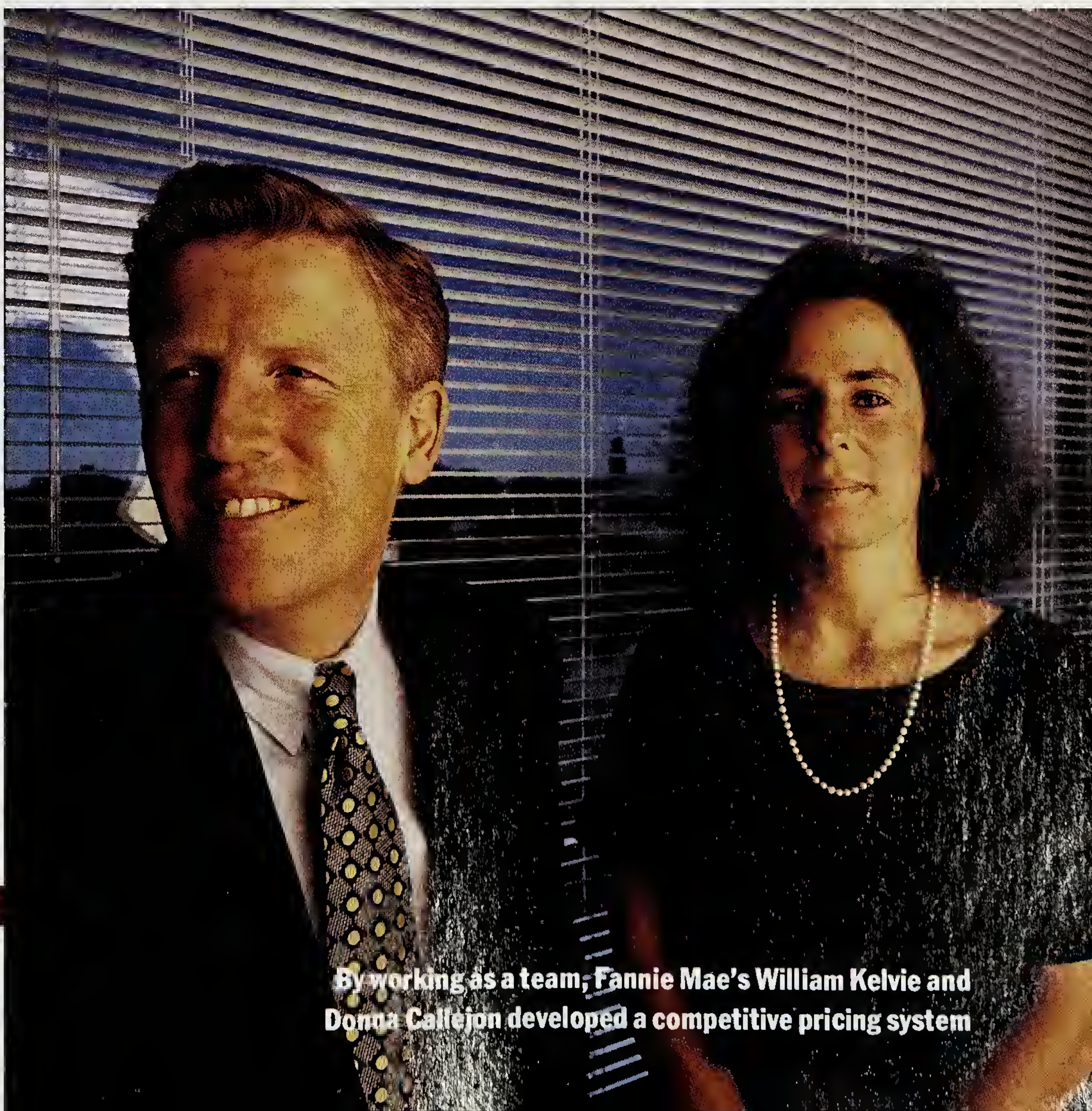
PHOTOGRAPHY BY JACK FOLEY

PANELIST VIEW

Susan Cohen

President,
The Aarons Group,
Marblehead, Mass.

"Fannie Mae aimed client/server at the heart of its business — helping first-time home buyers get a mortgage. Its submission was noteworthy for three reasons: its well-thought-out legacy migration plan; a robust portfolio of applications in production and under development; and a creative, rapid, consensus-driven design process."



By working as a team, Fannie Mae's William Kelvie and Donna Callejon developed a competitive pricing system

PHOTOGRAPHY BY
RON HOLTZ

FEDEX CUSTOMERS CAN HAVE IN-OFFICE, TIMELY ACCESS TO PACKAGE TRACKING INFORMATION

Your Very Own Courier

BY WILLIE SCHATZ

For some companies, employee empowerment is the ultimate goal. Not for FedEx Corp. It's taking things one step further by empowering its customers.

A few years ago, the Memphis-based overnight courier put shipping, labeling and tracking capabilities into the hands of its large-volume (20 packages per day) customers. Armed with a PC, scale, bar-code reader, several printers and a modem, each customer dials into a Tandem Computers, Inc. system that batches processes up to the mainframe.

Today, three-packages-per-day customers can do the same thing via a client/server system called Powership3. Two years into its tour of duty, Powership3 is having a major impact: It generates more than $1.5 million per day in revenue and ships more than 100,000 packages daily at 31,000 FedEx customer sites.

Customers get a stripped-down, DOS-based PC, a printer and either a modem or a CompuServe address. By dialing into an X.25-based Sun Microsystems, Inc. communications server, which connects to an Ethernet-based group of Sun application and database servers, they can ship and locate packages, print appropriate labels and dispatch a courier.

If necessary, the servers tap into the mainframe through an SNA server from CNT/Brixton Systems, Inc. in Cambridge, Mass.

To keep all the processes straight, FedEx installed a Tuxedo on-line transaction processing monitor. Before that, the system would hit capacity problems with 200 to 250 simultaneous users. "Now we've gone over 2,000 simultaneous customers," says Gil Hennon, senior systems analyst for client/server development at FedEx.

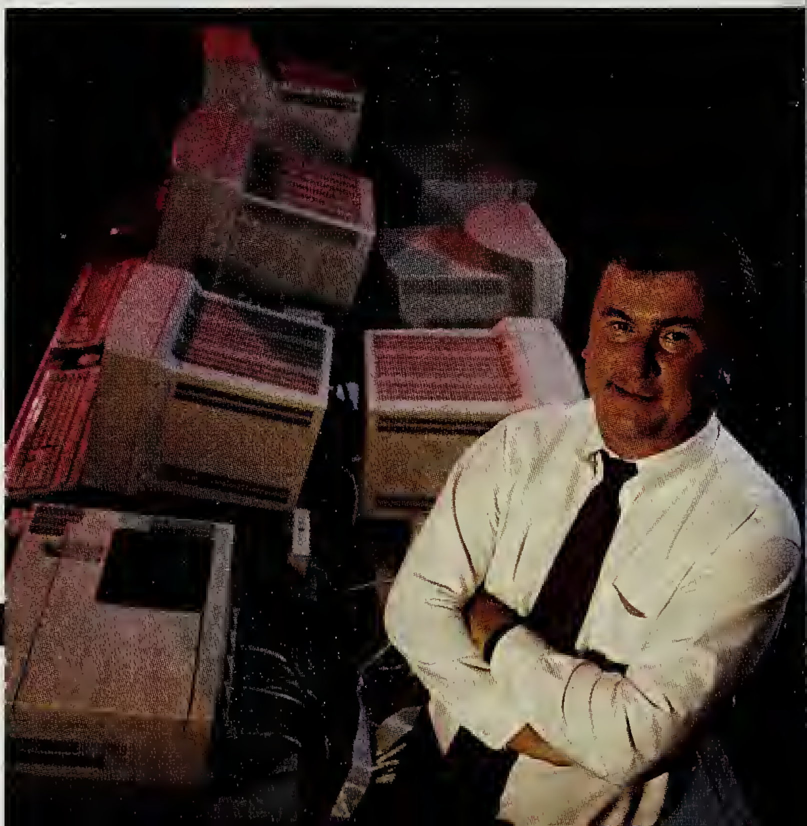
FedEx is also enhancing its in-house customer service function through client/server. In its 250-person billing services center, dumb terminals traditionally showed service representatives "one mainframe screen at a time," Hennon says. By adding Windows front ends and Hewlett-Packard Co. 9000 servers, FedEx has put more customer data on the screen plus a window to run a word processor. The change has diminished the length of calls from 6½ minutes to 1½.

A similar application for the customer call center (now in prototype) promises to reduce call times by 15 seconds. When customers call in, an automatic number identification system matches up the caller's telephone number with information on the customer, which appears on the service rep's screen.

With the mainframe system, "our internal users were hitting a brick wall," says Miley Ainsworth, FedEx's director of client/server technology.

Schatz is a freelance writer based in Washington.

Before FedEx's client/server system, 'internal users were hitting a brick wall,' Miley Ainsworth says ➡



PHOTOGRAPHY BY PATRICK MURPHY-RACEY/SABA

VITAL STATISTICS

FedEx Corp.

Memphis

MISSION
To make it easier for customers to track and ship packages by putting technology tools directly into their hands.

APPLICATION PROFILE
Powership3 is a three-tier system, with Sun boxes running Informix database servers accessing mainframes over an SNA network. An OLTP monitor ensures transaction integrity. Users dial in via CompuServe to arrange shipments and check status. Clients and servers written in C++, but clients updated with GUIs written in Visual Basic.

1994 REVENUE
$8 billion

1994 IS BUDGET
$10 million or less (customer service)

1994 CLIENT/SERVER EXPENDITURES
$10 million or less

Application development: 50%
Networks and infrastructure: 20%
Professional services: 20%
Development tools: 10%

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VITAL STATISTICS

Global Marine, Inc.

Houston

MISSION
To reduce operational costs, increase rig uptime and enhance the bidding process by replacing the entire mainframe environment.

APPLICATION PROFILE
Standards-heavy, two-tier system consisting of a centralized Sun server running Sybase's database, accessed by Compaq PCs running PowerBuilder applications, which rely heavily on stored procedures.

1994 REVENUE
$350 million

1994 IS BUDGET
$10 million or less

1994 CLIENT/SERVER EXPENDITURES
$10 million or less

Application development: 20%
Networks and infrastructure: 33%
Professional services: 42%
Development tools: 5%

MISCELLANEOUS
Global will unplug the mainframe in October.

GLOBAL MARINE SURVIVES STORMS, CUTS COSTS AND DITCHES THE MAINFRAME

Oil Driller Is Afloat And Ready For The Next Boom

BY MARY BRANDEL

If it were just any ordinary offshore drilling firm, Global Marine, Inc. might not be in business today. When oil prices dove to $10 a barrel in the mid-1980s, many drillers went dry.

But this $350 million, 42-year-old founder of the offshore drilling industry has weathered quite a few storms, including bankruptcy, industry crisis and a three-year, near-complete conversion from mainframe- to client/server-based computing.

The successful navigation is closely linked to the personality of the chairman himself: "He's a risk taker," says Richard Hudson, vice president of information systems at Global Marine. "The culture is one of innovation and invention."

FABULOUS 5

That's exactly the kind of attitude client/server pioneers needed five years ago. Upon emerging from Chapter 11 bankruptcy in 1989, Global Marine executives mandated a wholesale move off the mainframe, with an initial goal of cutting internal costs. "We didn't know what the word 'client/server' meant," says Mike Penny, manager of microsystems.

Since then, the company has developed a centralized, standards-heavy, two-tier system that extends out to rig offices in Australia, Africa, India, the Middle East and the Arctic Circle. Those offices upload payroll, rig maintenance and other financial data via electronic-mail links from Novell, Inc. LANs (sometimes via satellite) to a Sun Microsystems, Inc. 690MP server running a Sybase, Inc. database at the Houston headquarters.

Sister offices in Lafayette, La., and Aberdeen, Scotland, have real-time 56K bit/sec. links with the Houston database. When a Dun & Bradstreet Software financials suite comes on-line later this year, the transition to client/server will be complete [CSJ, June 1995].

The preventive maintenance system, a Powersoft PowerBuilder-based application that tracks rig maintenance histories and generates work-order cards, has improved monthly uptime on the drilling boats by 5%. For all 28 rigs, that's a savings of $1.26 million per month. The higher fleet uptime has had a direct impact on Global Marine's bottom line, Hudson says.

"Maintenance is the biggest cost [drillers] face," says Susan Morgan, director of communications in the energy and chemical sector at Cap Gemini America, Inc. in Houston. "If they can build a [preventive maintenance] database, they can predict when parts are going to fail. When you look at [daily rig charges of] $10,000 or $20,000 a day, that can be a large amount of money."

Next up for rig maintenance: stand-alone client/server systems on the rigs. Today, clerks re-enter paper-based summaries that rig hands have mailed in. The future system, to be built in PowerBuilder, "will have a good, user-friendly front end for checking off things they did on the rig," Penny says. The information will be sent to headquarters via cellular or satellite modem. In the most remote regions, rig hands will fly in floppy disks via helicopter.

Even without that increased efficiency, "we have one-third of the people doing more work faster and with a higher degree of accuracy and more timeliness," Hudson says.

Take payroll. Rig offices today send time sheets via E-mail to the company's PeopleSoft, Inc. system rather than faxing them for entry into the old Management Science America, Inc.-based mainframe system.

"With the handwritten sheets, we were bound to get misinformation," says Robert Bowden, payroll manager at Global Marine. Those mistakes could get expensive: According to a seaman's law dating back to the 1800s, "if you overpay [rig personnel], they get to keep it," he says.

But Global Marine has certainly hit some squalls along the way. One problem: "Three and a half years ago, there wasn't much software out there," Hudson says. And the choices weren't always safe ones. A partnership with Platinum Software Corp., for instance, wreaked havoc on Global Marine's schedule when the accounting vendor ran into financial troubles of its own. Global Marine switched to D&B Software, but the turmoil has put it a year behind schedule.

And users were not immediately enamored with the changes Global Marine expected of them. "They had to do their own report generation and take on more responsibility," Hudson says. "And they don't always go quietly into that good night."

Poor response times didn't help either. "They were getting subsecond response times with the dumb terminals," Penny says. "We just can't compete with that." To maximize response time, IS is helping users optimize code and scooping up new, more powerful Compaq Computer Corp. machines as fast as they're pumped out. In a couple of instances, Penny has put a second PC on users' desks so that they can multitask.

"It is not without challenges," Bowman agrees. He and his staff spent a few months working overtime to produce year-end financials after the new payroll system was implemented last October. Yet despite all the hard work, the efficiencies of direct deposit and better report writing have paid off. "To a man, they love it," Bowman says of his staff.

A big reason for users' tolerance, Hudson says, is the use of cross-functional teams. Right now, eight to 10 people from general accounting, accounts payable, asset management, vessel accounting and IS as well as consultants and D&B Software personnel are working on the financial conversion. "Because they've suffered together, it makes solving the problems a lot easier," he says.

Global Marine also worked within its capabilities from the start. "We don't have the manpower to be expert in everything," Penny says. Therefore, the company stuck with a fixed range of technology choices.

Global Marine also worked with outside consultants, who suggested an architecture based on PowerBuilder, which was new at the time, and an architecture that made much use of stored procedures.

Once the mainframe plug is pulled Oct. 1, Global Marine will implement more strategic systems as well, including a client/server rig locator system.

Such thinking gives Global Marine high marks for future success, Morgan says. "They've shown an ability to react and survive, which in the last 10 years says a lot. [The oil] business is booming, and it's because people like Global Marine are looking at ways to be competitive."

Brandel is Computerworld Client/Server Journal*'s senior editor.*

PHOTOGRAPHY BY DAVID BUTOW

PANELIST VIEW

Dr. Lewis Leeburg

Director of IS Research, Anderson School, UCLA, Los Angeles

"Global Marine's migration to client/server accounts for higher fleet uptime and therefore has a direct impact on [its] bottom line. Its development times are less than a year per application, which was made possible by giving authority to interdisciplinary teams to re-engineer business processes and implement resulting systems."

CIO Richard Hudson says a main ingredient in Global Marine's client/server success was multifunction teams

PHOTOGRAPHY BY CHRIS SHINN

HUGHES REVAMPS SATELLITE MANUFACTURING, REDUCES COSTS AND CUTS THROUGHPUT TIME

Of CIOs and Rocket Scientists

Gary Osborn would just as soon *not* be known for his deployment of client/server systems. And it's not because he shrinks at the thought of using advanced technology. As chief information officer at Hughes Space and Communications Co., Osborn is surrounded by what could literally pass as rocket science.

It's just that he's tired of those damned arrows in the back. "I'd read all of the literature, conducted studies and invited every major computer company to come and talk," Osborn says. "I found that all of that interoperability, brotherly love crap turned out to be bull. I didn't know what I was getting into."

Sound like the bitterness of failure? Think again, because Osborn and his staff have managed to wrest success from the demons of application incompatibility, network frailties and immature technology. In the process, they have produced three enormous client/server systems that interweave business management and product and operations data on every satellite in Hughes' manufacturing operations.

"Hughes has a better handle on the assembly line concept than any other competitor in the satellite market," says Roger Threlfall, vice president of equity research at J. P. Morgan Securities, Inc. in New York. "That process has helped them meet their goal of reducing [manufacturing] throughput time by nearly 25%. And that is remarkable."

It's also a testament to the transformational powers of information technology. Hughes' Integrated Satellite Factory, the result of a major process re-engineering effort begun four years ago, moves information just as surely as it transports space-bound craft onto the loading docks. The integrated factory/information technology combo is paying off, Threlfall says. Hughes holds a 22% share of the telecommunications satellite market, making it the leader in this torridly competitive industry.

Much of the credit belongs to Osborn and his staff. Five years ago, when Osborn first started exploring the ways and means of putting client/server to use, the technology was still more promise than substance. "I had thought we were a year behind the technology curve, and I was comfortable with that," Osborn says. "I find, instead, that we are several years ahead."

FABULOUS 5

Hughes' first step was to develop an overarching framework that divided its data into three distinct categories: product, operational and management. That principle has shaped the information technology underpinnings of Hughes' Integrated Satellite Factory.

Consider its Computer Aided Management Bridge, or CAMBridge, system, which handles management data for some 700 users. It contains a data warehouse, allowing ad hoc, SQL-based queries; a decision-support system; and a potpourri of management-aimed software, including applications for human resources, scheduling and financial and administrative use.

The first of Hughes' three core systems,

BY ROCHELLE GARNER

VITAL STATISTICS

Hughes Space and Communications Co.

El Segundo, Calif.

MISSION

To cut cycle times, improve quality and lower costs of satellite manufacturing by revamping IT and combining management, product and operational data.

APPLICATION PROFILE

A two-tier product data management system collects data into an Ingres database (which will be migrated to Oracle). By 1997, that will be integrated with a resource management system built on Fourth Shift Corp.'s MRP package on AT&T GIS servers running Oracle's Oracle7. CAMBridge, a three-tier systems amalgam, was built with tools running on Sybase, Inc. and Hewlett-Packard Co. HP-UX servers.

1994 REVENUE

$1.5 billion

1994 IS BUDGET

$60 million-plus

1994 CLIENT/SERVER EXPENDITURES

$30 million to $40 million

CAMBridge has achieved a 30% reduction in annual operating costs, a 40% reduction in systems cost and a 300% to 400% improvement in "deliverable functionality" over the mainframe systems it replaced. Total estimated savings since 1992: between $20 million and $30 million, Osborn says.

The two other core systems, Product Data Management (PDM) and Integrated Resource Management (IRM), are far more complex in their scope and ambition. Take PDM. Handling all of the product data, specifications, bills of material, customer requirements and even the computer-aided design drawings, PDM manages the workflow of the design process throughout the enterprise.

The beauty of PDM, which was built in partnership with Sherpa Corp. in San Jose, Calif., is its working relationship with IRM — essentially a manufacturing resource planning II system with added capabilities. IRM currently tracks material and work-in-progress costs. Phase two will handle all resources in the factory, from facilities to equipment and people; feed design-for-assembly information to designers; and allow marketing to forecast costs and schedules. By 1997, PDM and IRM will be seamlessly integrated.

Predicted benefits: $60 million a year cost savings, stemming from improved product cycle times. "These systems are vital components to our business strategy — the free flow of information, the right information at the right time to the people who need it," says Bob Klatskin, who, as program manager for process re-engineering, is Hughes' chief internal information technology customer. "That will allow us to remain competitive in a highly competitive market."

Perhaps equally important, Klatskin says he's seeing a new attitude among his engineering and manufacturing personnel. "Before, our weekly user meetings had been focusing on 'the problem of the week,'" Klatskin says. "But last night, the meeting revolved around using the IT capabilities to be more creative."

Ironically, much of Hughes' current re-engineering successes stem from previous information technology failures. "We spent a year trying to understand what the business strategy was," Osborn says. "When we thought we did, we went back and looked at the business processes to see if they satisfied that strategy. And what we found was a fair amount of disconnect among strategies, processes and the data they supported."

Disconnect in the form of different manufacturing processes for each kind of satellite technology. Different pieces that could just as easily have been shared among designs. And different groups of people who should have been communicating frequently but weren't.

And while business managers strove to reinvent their operations, Osborn worked on finding out how to best support a more nimble company. For the sake of flexibility, he chose a foundation of Unix and relational databases, chained into a client/server setup. He stayed with that decision, even as Hughes struggled to integrate a set of end-to-end applications, all configured to work off the same data sets.

The return on Hughes' IT investment would seem worth the effort. And yet Osborn still has misgivings. "After all of the promises I heard about how wonderful client/server would be, I found the technology was just too immature," he says. "I put a $2 billion corporation at risk, and I don't feel that was a particularly intelligent thing to do. But in a way, this is like betting on a volatile stock. It could have great returns, but the risk is high. I'm counting on those returns."

Garner is a freelance writer in San Carlos, Calif.

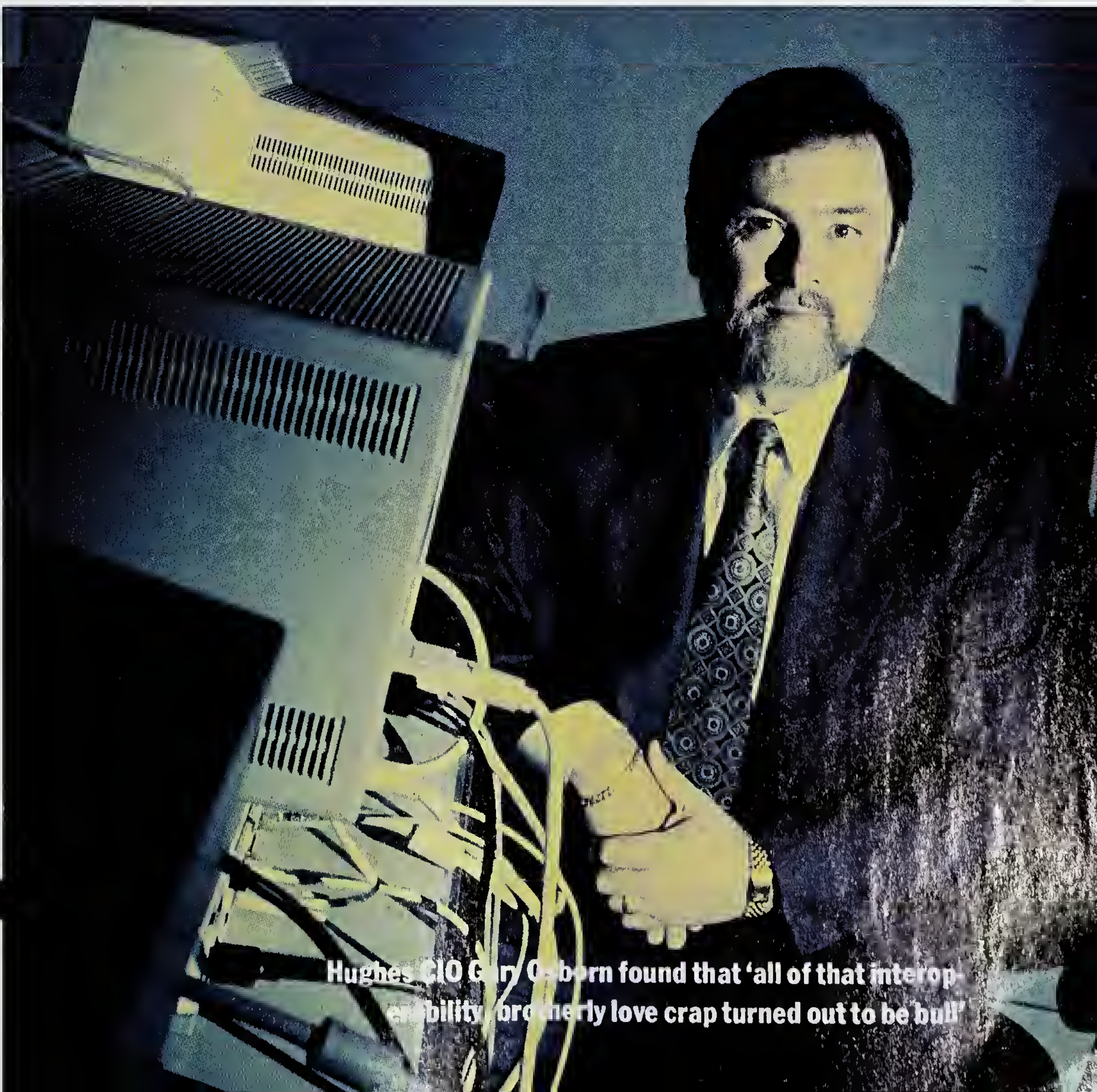
PHOTOGRAPHY BY DAVID BUTOW

PANELIST VIEW

Dr. Lewis Leeburg

Director of IS Research, Anderson School, UCLA, Los Angeles

"Hughes has halved cycle times, improved product quality, reduced operating costs, increased employee morale and productivity and increased net profitability. The key is integration using an open architecture, re-engineering business processes and developing a 'virtual IT organization' of users, partners and alliances."



Hughes CIO Gary Osborn found that 'all of that interoperability, brotherly love crap turned out to be bull'

PHOTOGRAPHY BY LARA JO REGAN

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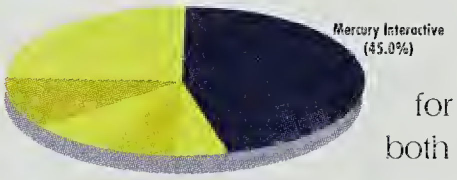

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(Source: International Data Corporation 1994)

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ECKXCWCS

ITT REVAMP PUTS INSURANCE PRODUCT DEVELOPMENT, SALES, UNDERWRITING UNDER ONE ROOF

Teamwork, With A Capital ITT

Like many companies, ITT Hartford spent the early 1990s revamping its business processes to not only survive but also thrive in the highly competitive commercial insurance business.

As a result, the ITT of today is not the ITT of 1990. Segmented, assembly line-style departments at its 39 regional offices have mostly given way to teams encompassing multiple disciplines, including marketing, sales, customer service, underwriting and loss control.

And thanks to a new three-tier distributed client/server infrastructure, each team works with a common set of applications to provide sales, underwriting and risk assessment support to independent insurance agents. Sales managers can track sales objectives, check financial status and evaluate competitive offerings as well.

Under the old system, an agent calling with a range of questions — on anything from rate information to policy changes to disbursement updates — would get routed from department to department. With the new system, a single person or a few people within one group can answer questions from their workstation. And agents always deal with a single team.

Pairing the team approach with an automated flow of information is "a very powerful combination," says Jim Ruel, implementation project manager for the project.

So powerful, in fact, that ITT has realized $17.6 million in savings since 1991. The system is in 30 field offices today, with full implementation scheduled by early next year. It is expected to save the company between $30 million and $40 million annually, primarily through reduced labor costs, slower employee turnover and improved service.

The Commercial Business Vision system works like this: Team members (who have an area of expertise as well as a backup role) query underwriting and sales/marketing data that is processed on local Oracle Corp. servers. The applications depend in part on updates from a home-office Oracle server.

The underwriting function also uses a homegrown workflow system. Submissions from the agents are entered into the system and routed to team members, who access legacy rating and coding data via FutureSoft Engineering, Inc.'s DynaComm/Elite.

During implementation, "we [were] constantly trying to be prepared for . . . the things that didn't work," such as support resources, says Jeff Bartlett, information systems project manager. Instead of the planned five- to six-member staff, ITT expanded the platform support staff to 15, mainly in response to a lack of management tools.

Such lessons, says Ray Howell, assistant vice president at ITT, will bolster ITT's ongoing effort to integrate the entire enterprise.

Jenkins is a freelance writer in Ansonia, Conn.

BY AVERY JENKINS

VITAL STATISTICS

ITT Hartford

Hartford, Conn.

MISSION
To help cross-functional teams reach their goals of speeding product development, improving customer service and supporting frequent regulatory and market changes.

APPLICATION PROFILE
AT&T GIS servers at the home office run Oracle databases to provide product registry data to departments running Gupta Corp. SQL Windows. In regional offices, teams query Oracle servers processing underwriting and sales applications.

1994 REVENUE
$2.98 billion (for the commercial insurance division)

1994 IS BUDGET
$30 million to $40 million

1994 CLIENT/SERVER EXPENDITURES
$20 to $30 million

Application development: 35%
Networks and infrastructure: 55%
Professional services: 5%
Development tools: 5%

ITT's Jeff Bartlett: 'We [were] constantly trying to be prepared for . . . the things that didn't work' ➡

PHOTOGRAPHY BY JOHN RAE

VITAL STATISTICS

Metro-Goldwyn Mayer, Inc.

Santa Monica, Calif.

MISSION
To re-engineer and rebuild the technology infrastructure of the entire company to regain business potency.

APPLICATION PROFILE
The sales force will use multimedia IBM ThinkPads, Watcom databases and Powersoft PowerBuilder applications to dial into headquarters' Sybase 10 database over InfoNets' X.25 Worldwide Cloud network. The database downloads title, license, contract and financial data from an AS/400 repository. Sales staffers will also use Microsoft Corp. Office applications and Lotus Development Corp.'s CC:Mail. The sales force will play video clips for clients using ThinkPad CD-ROMs.

1994 REVENUE
$750 million

1994 IS BUDGET
Less than $10 million

1994 CLIENT/SERVER EXPENDITURES
Less than $10 million

THE LEGENDARY STUDIO LOOKS TO A SYSTEMS REVAMP TO REESTABLISH ITSELF IN HOLLYWOOD

MGM Finds 'Stars' Potential

ONE TO watch

Eighteen months ago, Edward Altman left Paramount Pictures Corp. to accept the top information systems post at Metro-Goldwyn Mayer, Inc. His charter: help rebuild MGM as a full-fledged major studio.

It's been no small task. The studio was in rough shape when French bank Credit Lyonnais bought it three years ago, and the bank is under pressure to find a new owner by mid-1997.

The greatest need was to straighten out the rights-licensing systems for MGM's film and TV libraries, a main source of revenue. MGM had acquired many new libraries and hence many disparate support systems — 23, in fact. There was no quick way for salespeople to determine what listings were available in their territory.

In addition, MGM had re-engineered the sales support group into self-directed teams of finance and contract personnel. "The whole passion was to automate and empower the sales force as much as humanly possible," Altman says. "The home office people needed empowerment, too."

MGM's partly rolled-out Stars system is expected to be the cure. It consists of three key databases: An IBM AS/400 will contain all the data held on the disparate systems; a Sybase, Inc. System 10 database will receive daily updates from the AS/400 and new contract data from the sales force; and salespeople will carry Watcom databases on multimedia-equipped IBM ThinkPads. By dialing in over an X.25 line, they can obtain timely information on titles available in their territory.

The AS/400 is already operational; the old systems will be unplugged this summer. Salespeople are training on the ThinkPads and will have their applications by fall.

Stars is expected to cut labor costs, and "I hope to be able to show revenues going up as well," Altman says.

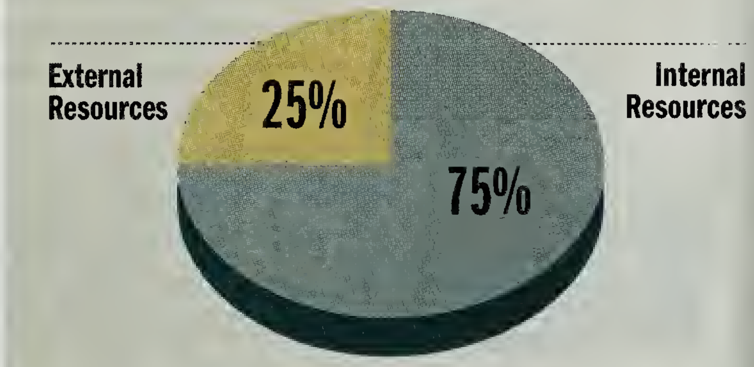
Altman's greatest challenge was staffing. Three direct reports left MGM soon after his arrival. He hired new staffers, and after clarifying IS's goals to the remainder, "turnover was amazingly low," Altman says.

Altman reorganized systems development into a client/server and a "core systems" team. "The best way to get immediate change is to create a separate organization," he says. But the core team will be given a few client/server projects. "One of the dangers is that the one group becomes the elite group," says Ed Themann, director of systems development for core systems. "You want to inspire everyone to learn."

Brandel is Computerworld Client/Server Journal*'s senior editor.*

Audience participation

All of MGM's client/server projects are initiated and sponsored by end users, and all are preceded by re-engineering. Internal IS provides most of the training and consulting.

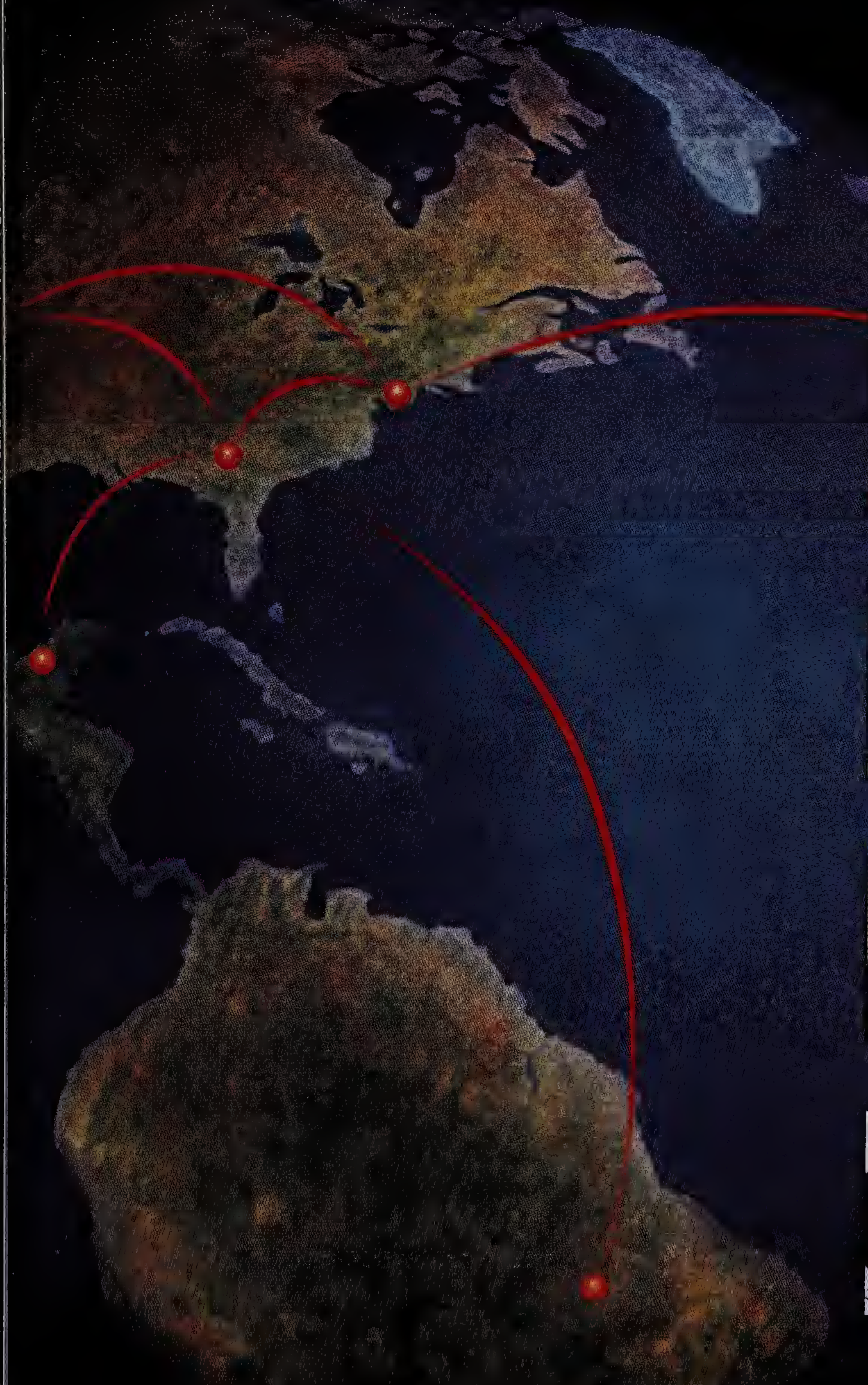


(PERCENT OF CONSULTING COSTS)

Source: CSJ Survey

BY MARY BRANDEL

Tivoli Makes Client/Server Work Across Your Enterprise.



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A SURGE IN NATIONWIDE'S BUSINESS REQUIRED NEW DISTRIBUTED SYSTEMS AND A REDESIGN

Fast Growth = New Systems

BY MARY BRANDEL

Five years ago, Nationwide Mutual Insurance Co. watched its investment business surge to what is today a $7 billion operation — 42% of the insurer's $16.5 billion business. But it couldn't afford to stand by and enjoy the view.

There was no way, for instance, it could tolerate the month-long wait for programmers to add a mutual fund. And customer service representatives could not keep spending half their time on document searches.

So Nationwide, the second-fastest-growing life insurer in the U.S., embarked on a systems architecture that relies on Unix servers, relational databases, information engineering techniques and open systems standards such as the Open Software Foundation's Distributed Computing Environment (DCE).

The first system to change was the unit value system, which processes nightly account values for Nationwide's investment vehicles. Using Oracle Corp. computer-aided software engineering tools, Nationwide built in 18 months a system that lets five employees set up new funds in minutes via a Windows interface. The eight-processor Sun Microsystems, Inc. system feeds 36,000 calculations to several internal systems and to stock exchanges via electronic data interchange.

Financial returns haven't been quantified, says Bruce Barnes, vice president of investment product systems, but Nationwide can introduce funds and services faster.

Meanwhile, the investment dealer department is using a Sun/Sybase, Inc. imaging/workflow system that in early 1996 will expand to two other Nationwide businesses. To log new business, multifunction teams follow predetermined workflows to route documents that are scanned or faxed into the system. "We've eliminated lost work and mundane logging, and we've enhanced people's jobs to be more cross-functional," says Tim Lyons, systems officer. This should save $700,000 to $1 million in yearly labor costs.

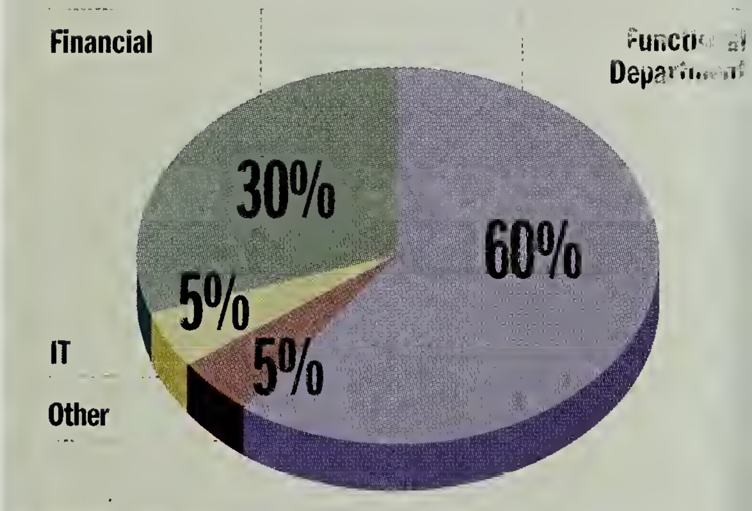
Over time, the workflow system will be synchronized with Nationwide's other disparate systems that support its service center. "We're receiving multiple millions of dollars per day in new business," Lyons says. "All that has to be balanced."

So far, the foundation for the two- to three-year effort has been laid with an Encina transaction monitor and DCE middleware coordinating transactions for CICS, DB2, Sybase and Oracle servers. Over four years, Barnes expects to save close to $10 million in labor, reduced errors and shorter training times.

Brandel is Computerworld Client/Server Journal*'s senior editor.*

Departments lead the charge

At Nationwide, business departments te initiate client/server efforts. Chosen projec then sponsored by an executive at vice pr level, with general management concurre



Source: CSJ Survey

VITAL STATISTICS

Nationwide Mutual Insurance Co.

Columbus, Ohio

MISSION

To support fast-paced growth, reduce product development and minimize support costs by aggressively migrating to RDBMSs, CASE, Unix servers and DCE.

APPLICATION PROFILE

Mutual funds system was developed in Pro C and SQR and runs on an eight-processor Sun SPARC 1000 running Oracle 7.0. A workflow-oriented customer service system runs on Sun servers with JTS Open Image software. Eventually, all disparate customer service systems will be tied together with DCE.

1994 REVENUE

$16.5 billion ($40 billion-plus assets)

1994 IS BUDGET

$60 million-plus

1994 CLIENT/SERVER EXPENDITURES

$30 million to $40 million

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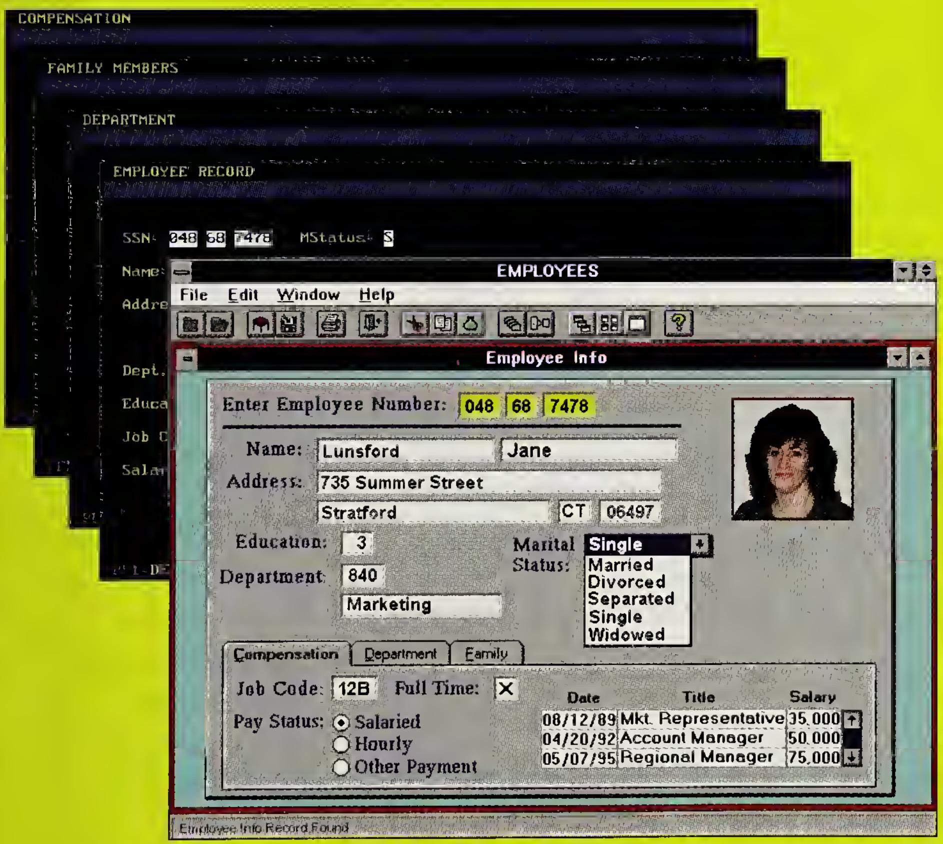

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Education: 3

Department: 840

Marketing

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Separated
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Job Code: 12B Full Time: ☒

Pay Status: ● Salaried
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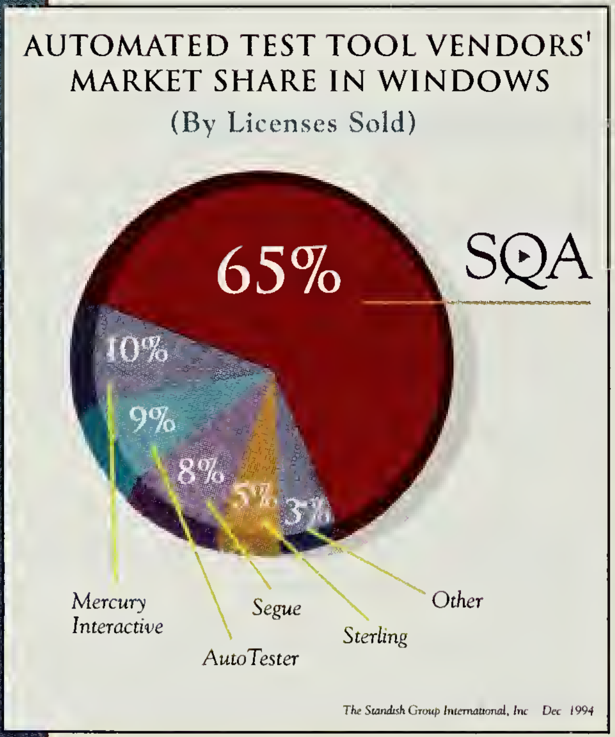
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VITAL STATISTICS

Norwest Corp.

Minneapolis

MISSION
To replace proprietary, tapped-out personal banking, teller and business banking systems for 10,000 users across the bank's 70 branches serving 15 states.

APPLICATION PROFILE
Personal banker and teller systems were built with Dallas-based Argo Data, Inc.'s Bankpro tools. Customer and transaction data resides on DB2/2 OS/2 servers accessed via PS/2 workstations over an OS/2 LAN Server network. The business banking system was built with Seer Technology, Inc.'s HPS. All branch servers will eventually communicate with the corporate mainframe over a TCP/IP network.

1994 REVENUE
$800.4 million ($62 billion in assets)

1994 IS BUDGET
$162 million

1994 CLIENT/SERVER EXPENDITURES
$40 million to $50 million

A NEW BRANCH-BANKING SYSTEM BRINGS CROSS-FUNCTIONAL DATA SHARING, FASTER SERVICE TO NORWEST

Bank Systems Gain Interest

BY ALAN ALPER

When Norwest Corp. reached a dead end with its proprietary branch-banking platforms, the die was cast: The bank became a client/server convert. "The rationale was to build an infrastructure to take us into the future," says Laura Schupp, manager of branch delivery systems.

That meant migrating off its IBM System/36-based personal banker, business banking system and costly, limited IBM 4700 terminal/host teller system. By standardizing on IBM PS/2 desktops and servers and OS/2, Norwest simplified the replication of teller and customer service functions while providing a common environment for application development and improved workflow automation at the branch level, Schupp says.

For the first time, account representatives can get their arms around the bank's relationship with small business and high net worth customers. "A lot of the data that was in the head of the banker or in his personal file is now in the hands of the total team," notes Dave Mathews, application manager of the business banking system.

For instance, bankers' reports are entered into a DB2/2 database and accessed across functions from credit to legal using SQL queries and report writers.

Customers also get a new view. "We added a module that would enable personal bankers to compare different checking account products to see which one might be a better fit" for customers, Schupp explains.

Cost justification was based on soft benefits. "One [pilot study] said they'd hit markets in common that heretofore they didn't have staff for. The other said we'll use the time to increase cross-selling," Mathews says.

The teller system is credited with reducing errors from 30% to 2%, Schupp says, while the personal banker system lets customer service staffers more quickly open accounts.

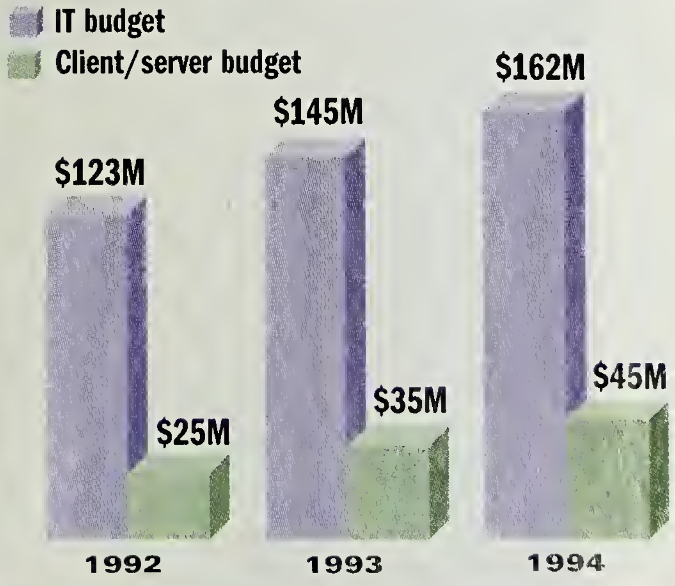
Bank staff "will tell you the technology is absolutely great — so great we can't deliver change fast enough," says Debra McCray, vice president/director of delivery systems at Norwest's banking services group.

But there were surprises. The system has created unforeseen and unbudgeted service, support and infrastructure demands at the branches. "We tried to do integration between the apps we built and Microsoft Office and local database apps. We had to build expertise as we went along. I'm not sure we clearly thought through what this meant on delivery time," Mathews concludes.

Alper is editor of Computerworld Client/Server Journal.

On the up and up

Client/server expenditures at Norwest as a percentage of overall IT expenses rose from 20% in 1992 to almost 28% last year



Source: CSJ Survey

GLOBAL SUPPORT PROVIDERS WILL DIP INTO A COMMON NOVELL CUSTOMER SERVICE POOL

Support, Global-Style

BY ELISABETH HORWITT

The time: January 1995. **The place:** Utah's Sundance resort. **The occasion:** A discussion among Novell, Inc.'s top-tier, third-party support organizations on how the networking giant could improve its technical support. **The conclusion:** The servicers want a call-escalation system for access to Novell senior engineers who have the latest (product) databases at their fingertips. Even better, they want direct access to Novell's own internal product databases.

Novell's response: It's in the works.

Indeed, Novell is rolling out Quality Support, a top-to-bottom re-engineering of the worldwide system that delivers technical support information to its resellers, authorized service centers, large accounts and on-line technical services.

The system, which logs bug and glitch complaints, will eventually support 1,750 internal Novell support people worldwide and up to 1,000 Novell Authorized Service Centers (NASC). It is expected to provide annual savings in excess of $10 million, primarily by enabling Novell to boost its call handling without adding staffers, according to Ed Armstrong, senior manager of Novell's information systems and technology division.

The keystone is a three-tier client/server system developed using tools from The Vantive Corp. in Mountain View, Calif. A relational database holds all technical specifications and trouble reports across all Novell product lines. Armstrong's group plans to add the last big piece — WordPerfect products — by the end of fiscal 1995.

The relational database, coupled with ad hoc reporting tools, will finally enable technical support people to do ad hoc queries such as, "Show me all instances of this problem in the past six months," says Michael Bishop, director of electronic support at Novell.

NASC users will be given Windows client front ends to access the system via a NetWare Communications Server.

The client/server platform has a stunning 99.4% uptime so far; in comparison, the old system's 2% downtime "ran us easily a quarter of a million dollars a month in lost labor," Armstrong says.

"The company that provides the best support and systems integration services will have a significant advantage in the enterprise systems arena," says David Cearley, vice president of workgroup strategies at Meta Group, Inc. in Stamford, Conn.

Another project at Novell is a call distribution/call response system that routes callers to the service area and downloads information about the caller to the engineer, Bishop says. This will route NASC inquiries to the correct Novell engineer, who would then tap into the problem tracking system.

Horwitt is a freelance writer based in Waban, Mass.

Ed Armstrong expects the new customer service system to save Novell more than $10 million annually

PHOTOGRAPHY BY
ED ROSENBERGER

VITAL STATISTICS

Novell, Inc.

Provo, Utah

MISSION
To revamp customer service, creating a problem-resolution database and call-distribution system shared by worldwide service providers.

APPLICATION PROFILE
Three-tier system built on Vantive development environment. Windows-based clients access Sybase System 10 RDBMS server running on a Hewlett-Packard HP 9000 Model T500 via a NetWare communications server over TCP/IP links. Business rules and middleware, based on Vantive's IWServer, handle queries.

1994 REVENUE
$2 billion

1994 IS BUDGET
$30 million to $40 million

1994 CLIENT/SERVER EXPENDITURES
Less than $10 million

Application development: 10%
Networks and infrastructure: 50%
Professional services: 35%
Development tools: 5%

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VITAL STATISTICS

Phillips Petroleum Co.

Bartlesville, Okla.

MISSION
To create an application architecture that meets the company's goal of streamlining operations and focusing on individual business unit performance.

APPLICATION PROFILE
DCE-based three-tier architecture with Microsoft Visual Basic front ends; Unix servers processing the business logic; and Oracle or Sybase, Inc. as the database tier, running on IBM RS/6000s. TCP/IP, IPX and SNA are the transport protocols.

1994 REVENUE
$484 million

1994 IS BUDGET
$60 million-plus

1994 CLIENT/SERVER EXPENDITURES
Less than $10 million

Application development: 30%
Networks and infrastructure: 30%
Professional services: 20%
Development tools: 20%

PHILLIPS PETROLEUM LOOKS TO SYSTEMS REVAMP, STREAMLINED ARCHITECTURE FOR BOTTOM-LINE BOOST

Big Oil Made Manageable

The mid-'80s buyout craze changed Phillips Petroleum Co. forever. The company restructured to remain independent after two takeover attempts but took on considerable debt as a consequence. The aftermath "forced us to become lean before it became in style," says Mike Guidry, project leader at the company. "We learned to live in thin margins, and IT had to respond."

Phillips responded by divisionalizing, and IT followed suit, aiming to focus on the performance of individual business lines.

Today, the company is still working to make its heterogeneous enterprise interoperable. But already it has spun out some operational applications to verify the new distributed architecture, Guidry says.

A 100-user, environmental audit-tracking system, for instance, is saving the company $10,000 a year in labor and fine-avoidance. And a 28-user contract management system is saving Phillips $275,000 a year because of better tax-tracking, reduced order-placement errors and faster invoicing, according to Robin Davies, project leader at Phillips.

At the base of these applications is a multitiered infrastructure, with graphical user interface-based desktops talking to application services on Unix or mainframe boxes stoked with data from relational databases.

"Every place we can, we're applying open industry standards," such as the Open Software Foundation's Distributed Computing Environment (DCE), Guidry says. That's because top IT managers at each of the divisions realized the importance of hammering out an architecture that enables local processing but a corporatewide view.

For Phillips' first distributed application, for example, developers chose to work with Open Environment Corp. (OEC) in Boston, which is migrating its tool set to DCE, Davies says. With the audit-tracking system, managers can track Phillips' progress in correcting environmental problems. The presentation layer is written in Microsoft Corp.'s Visual Basic, and data is kept in an Oracle Corp. database at headquarters. The infrastructure is held together with the OEC tools, which create the remote procedure calls that communicate over TCP/IP.

The contract management application also used the OEC tools. But this application has a more independent middle-tier function because it was designed for reusability, Guidry says. Phillips will likely extend the application into managing sales or raw materials.

Brandel is Computerworld Client/Server Journal*'s senior editor.*

Phillips' index

Phillips is applying client/server technology to meet the needs of its strategic business units

Average implementation time frame for client/server applications	6 months or less
Expected life span	4 to 5 years
Total application portfolio to date	1,000-plus
Total new applications being built in client/server	80
Total new applications being built in centralized environment	20

Source: CSJ Survey

BY MARY BRANDEL

VITAL STATISTICS

Staten Island University Hospital

New York

MISSION
To enable physicians, hospital workers, ambulatory care sites and nursing homes to get comprehensive patient information on-line to improve care quality, cut costs and comply with government reporting regulations.

APPLICATION PORTFOLIO
A Microsoft Windows NT server accessed by Gupta SQL Windows applications provides patient data to 10 to 12 LAN servers for PC access.

1994 REVENUE
$288.6 million

1994 IS BUDGET
Less than $10 million

1994 CLIENT/SERVER EXPENDITURES
Less than $1 million

Application development: 70%
Networks and infrastructure: 15%
Professional services: 10%
Development tools: 0%
Miscellaneous: 5%

STATEN ISLAND UNIVERSITY HOSPITAL STRIVES TO BUILD A COMPREHENSIVE ON-LINE PATIENT RECORD SYSTEM

An IT Elixir For The Health Care Crisis?

BY STEVE ALEXANDER

ONE TO watch

Staten Island University Hospital in New York is attempting what might be called the medical profession's dream: An extensive, up-to-date paperless patient chart. When the system is complete, hospital workers, off-premises physicians, nursing home staffers and adult board and care homes in the New York metropolitan area will have access to complete patient data in seconds.

Only 5% to 10% of U.S. hospitals are actively working on such systems, known in the hospital industry as computerized patient records. The reason: fragmented systems. Hospital applications tend to work along departmental lines rather than track patients throughout their hospital stay. As a result, paper patient charts still tie together the dispersed systems.

"Client/server applications today don't really support the management of the care process," says Chuck Henderson, senior manager at Andersen Consulting's health care practice in Columbus, Ohio.

This will change in the next five years as the majority of hospitals seek to manage hospital care and costs and comply with federal, state and regulatory agencies, according to Henderson.

Staten Island Hospital, a $288 million private institution formerly associated with the State University of New York, has a ways to go to make its paperless patient chart a reality. But a test system, developed in 18 months with Gupta Corp.'s SQL Windows, is up and running on a Microsoft Corp. Windows NT server in the information systems department. With the system, physicians can quickly access records detailing a patient's medical history, current treatment, historical information, demographics, insurance coverage, laboratory results and prescriptions, says Katherine Kania, the department's coordinator of applications development.

By next month, the hospital hopes to roll out the system to 100 users in the hospital and also to the first remote users — area nursing homes — which will dial in via modem. Eventually, 10 or 12 Novell, Inc. local servers in the hospital will provide data to 400 users, according to Don Muir, the hospital's vice president of administration and former chief information officer.

An older patient records system lets physicians directly access the IBM AS/400 system. "It would take you 25 to 30 minutes to get all the information you needed for a patient's complete health record" on the AS/400, Kania says. "On the client/server system, you'll be able to access all the pieces of the record in five minutes."

That increased response time is important to doctors, who tend to be an impatient lot, says Dr. Moshe Stern, a Staten Island physician and one of the leading proponents of the system. In addition, physicians can do targeted queries rather than get a data dump, as on the AS/400.

Just $200,000 has been spent so far, according to Muir. But Staten Island expects costs to rise about $1 million higher in hardware and network infrastructure costs.

An expected $1 million-plus annual savings will hopefully offset that expenditure. One-fifth of the savings will come from a 15% reduction in manual labor costs. "We don't have a lot of people in the medical records department putting paper charts together," Kania says.

In addition, doctor adherence to standard treatment is expected to reduce patient stays by about half a day, adding up to $1.1 million in savings. Staten Island anticipates further expense cutting due to a better ability to promote preventive health care.

Such time and cost savings are important to doctors, who are becoming increasingly busy as medical care grows more complex, and to the hospital, which is being forced by insurers and competition to provide equal or better care at lower prices.

The 633-bed, 4,300-employee hospital is pilot-testing another NT-based application that prints out prescriptions and accompanying warnings. Any drug administered to the patient is recorded in the patient's electronic chart. If the patient falls ill and visits the emergency room, the attending doctor can immediately check on the possibility of an adverse drug reaction.

PAPERLESS CARE

During the next 18 to 24 months, several other applications will be added that will dovetail with the patient care system. Priority order will be determined at a strategic planning meeting next month.

One of the most important applications is the "critical care path," which contains a list of rules for the standard treatment of various diseases. If a doctor orders a laboratory test not in line with those rules, the client/server system will flash a warning on the screen. Other key applications for the paperless chart will collect emergency room and operating room treatment information.

The client/server system will also help fill a glaring gap in today's electronic patient record: the lack of doctors' bedside notes, which currently exist only on the paper patient chart.

Doctors will be able to dictate notes into a voice-recognition system that will make their comments available electronically, according to Kania.

The scope will expand further in about a year, when Staten Island will begin to exchange on-line X-ray, ultrasound and mammogram images with doctors' offices, nursing homes, adult board and care homes and 14 other area hospitals. Details of how that information will be transmitted have yet to be finalized.

THUMBS-UP FROM DOCTORS

Despite these sweeping changes, Staten Island has so far been able to maintain doctor approval of the system. Henderson says doctor opposition to client/server systems is fairly common. "There is a large segment of doctors that are not ready to use computers," he says.

One of the system's key pluses, according to Stern, was that it did not require doctors to make major changes in the way they do their jobs. "Doctors' time tends to be constrained. The less they have to do something new, the better they like it," he says.

"We just made it simple," Kania says of the client/server system's user interface for doctors. "It's point-and-click technology. If they can read, they can use the system."

Alexander is a Minneapolis-based journalist who reports on technology.

PHOTOGRAPHY BY EDWARD SANTALONE

PANELIST VIEW

Bill Rabin

Managing director of technology research, J. P. Morgan & Co., New York

"Staten Island Hospital's patient record system shows how the institution is aggressively moving to cut costs, increase efficiencies and enable medical personnel to spend more time with patients. If they're successful, they will have accomplished a gargantuan task."

Katherine Kania (left) and her project team at Staten Island (left to right): David Samuel, Don Muir, Rick Carney and Lois Long

PHOTOGRAPHY BY
EDWARD SANTALONE

VITAL STATISTICS

Texas Instruments, Inc.

Plano, Texas

MISSION
To completely revamp the manufacturing process and enable on-the-fly changes through object-oriented technology.

APPLICATION PROFILE
Five-tier system that enables applications to share information. X terminals, PCs and Unix workstations access a Servio Logic Corp. object store on Sun Microsystems, Inc., Hewlett-Packard Co. or IBM servers. Applications were developed using ParcPlace's VisualWorks/Smalltalk.

1994 REVENUE
$10.3 billion

1994 IS BUDGET
$60 million-plus

1994 CLIENT/SERVER EXPENDITURES
$60 million-plus

Application development: 40%
Networks and infrastructure: 50%
Professional services: 5%
Development tools: 5%

OBJECTED-ORIENTED TECHNOLOGY GIVES TEXAS INSTRUMENTS AN EDGE IN CHIP MANUFACTURING

Lean 'n' Mean In Texas

BY CHERYL GERBER

Four years ago, Texas Instruments, Inc. was losing market share in its core semiconductor business to Intel Corp. and Motorola, Inc.

But today, it's growing twice as fast as the market. Why? The answer lies in a top-to-bottom manufacturing makeover, powered by object-oriented client/server systems.

"A few years ago, TI had multiple business strategies and too broad a product line," says Michael Geran, technology analyst at the Pershing division of Donaldson, Lufkin & Jenrette Securities Corp. in Jersey City, N.J. Between product consolidation and the manufacturing systems overhaul, "business is booming," he explains.

An object-oriented computer-integrated manufacturing (CIM) system, for instance, is reducing 1,000-wafer production time from 30 to 2.9 days and saving $18 million per year per fabrication line. Moreover, the system's flexible architecture allows TI to perform on-the-fly alterations to meet customers' needs.

To begin the revamp, TI built a yield-management application, called Autonet, that runs on factory-floor Unix servers connected to a mainframe. It automates what used to be a manual process: monitoring wafer fabrication. Today, more wafers end up in functional chips, meaning fewer end up as scrap.

"We save an average of $30,000 per year per piece of semiconductor processor equipment that we connect to the client/server system," says Scott Watson, TI's semiconductor CIM manager.

But to improve manufacturing efficiency, TI needed an integrated system that tracked production from chip specification through yields. Using object-oriented tools from ParcPlace Systems, Inc., TI built a five-tier CIM system, including the user interface, presentation logic, business object logic, persistent object logic and persistent object storage.

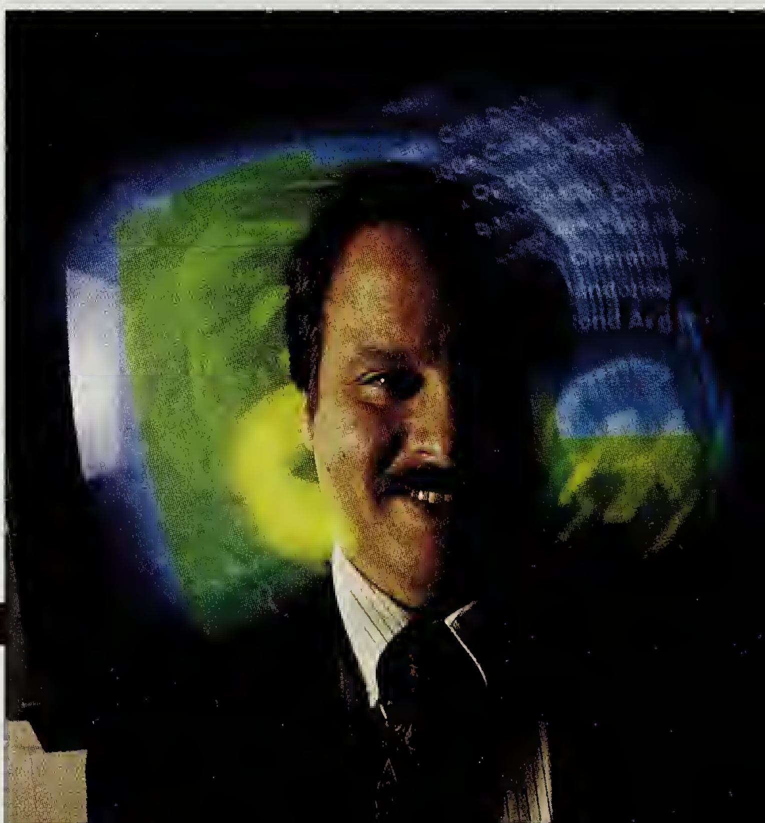
The Works system allows X Window System terminals, PCs or Unix workstations to access a variety of networked applications, such as capacity planning and machine scheduling. Today, TI can shut down a production line, swap new business objects for old ones and quickly change manufacturing process parameters. What permits this is Works' built-in, peer-to-peer infrastructure, which allows objects to communicate across multiple applications.

Works will be rolled out from five wafer plants to another nine plants in the next three years. By that time, it should deliver annual returns of $60 million-plus.

TI is reaping another key benefit of object-oriented development: rapid application deployment. "It used to take years to get large applications developed. Now it only takes two years to nine months," says Jodie Ray, TI's chief information officer.

Gerber is a freelance writer in Kingston, N.Y.

Scott Watson says Autonet is saving TI $30,000 per year per piece of semiconductor equipment ▼



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AN EARLY MOVE TO PC-ACCESSED MAINFRAMES PROVIDES A CONTINUOUS SERVICE EDGE

Not A Second Too Late, Vanguard Revamps Service

In the service business, seconds count. In fact, any phone call over four minutes long in customer service is just too long, according to The Vanguard Group, Inc. in Valley Forge, Pa., the second-largest mutual fund company in the U.S.

Four minutes was about how long it took in 1989 for the 300 Vanguard telephone service representatives to page through 30 screens of data when customers called with questions or transaction requests. At the time, Vanguard was using a service bureau mainframe to calculate shareholder values — including some 100 funds, 2.5 million shareholder accounts and 50 million lines of historical data.

However, with new funds and services on the horizon, the number of screens was about to increase to 40. "An increase of merely 15 seconds per call would have unacceptably dire consequences on service quality, productivity, cost and morale," says Bob DiStefano, senior vice president and chief information officer at the $141 billion company.

Vanguard also faced another problem: cost. As its business grew, so did its per-account mainframe service bureau costs. Plus, the account maintenance charges were increasing by approximately 7% per year.

Client/server in 1989 was little more than a twinkle in some techie's eye. Nevertheless, Vanguard embarked on a $20 million, two-year project to bring home the shareholder account processing function and put a more friendly face on the information via client/server computing.

The company's early jump into client/server has taught it some valuable lessons — lessons that have led to 23 live and 16 in-development client/server systems. These include a workflow-management application that routes paper-based mail from an IBM AS/400 to OS/2 PCs and an additional customer-service system that enables non-service-oriented employees to field phone calls during crunch times.

FABULOUS 5

"The move was done on the basis of controlling our destiny from a service point of view, but it was also less costly and more efficient to do it ourselves," DiStefano said.

Today's customer service system, which took 12 months to build, is still CICS- and VSAM-based. But now it runs on Vanguard's own mainframes. Also, Vanguard restructured the data and rebuilt the queries to better reflect a typical customer call. The most important change: Service reps can see all relevant customer account information on one screen rather than having to jump from screen to screen to see each account held by an individual customer.

Service representatives use interfaces that were designed with Tewksbury, Mass.-based Intelligent Environments, Inc.'s Application Manager to do what DiStefano calls "a sophisticated form of screen scraping."

"We wrote a database query that would send us back one record, to deal with all the

BY AVERY JENKINS

VITAL STATISTICS

The Vanguard Group, Inc.

Valley Forge, Pa.

MISSION

To free employees from back-office activities so most are involved in customer contact positions. Give customers self-service capabilities.

APPLICATION PROFILE

Mainframe systems batch-process fund share prices and client account records. OS/2 PCs access the data with front ends developed in Intelligent Environments' Application Manager.

1994 REVENUE

$141 billion in assets

1994 IS BUDGET

$60 million-plus

1994 CLIENT/SERVER EXPENDITURES

$60 million-plus

Application development: 35%
Networks and infrastructure: 40%
Professional services: 15%
Development tools: 10%

MISCELLANEOUS

IT will not start a project without business managers actively involved on the team.

data at once," he says. It's also less prone than regular screen-scraping systems to communication-error messages that might pop up on the CRT screen.

The payoff: annual returns of $7 million to $8 million — a three-year return on investment. Not bad, considering that Vanguard was counting on net annual returns of $5 million.

The quick return, DiStefano says, is due primarily to Vanguard's client base growth, which was 20% per year. As the company added new accounts, it saved an increasing amount of money compared with the service bureau costs.

Vanguard's focus depends on delivering service as cheaply as possible, according to Jon Teall, a financial analyst at Lipper Analytical Services in Summit, N.J. The company's approach is quite different from its prime competitor, Fidelity Investment Services: While Fidelity goes after the high-visibility, high-performance funds, Vanguard's investments are built around the principle that "over time, almost everyone does as well as what the market does," Teall says.

In this effort, the adoption of client/server technology has likely helped the company maintain its competitive edge. "They are either the lowest cost or close to it in terms of expense ratio," Teall says.

A smooth transition was crucial to the success of the new system. And so Vanguard continued to use the service bureau as users trained on the new front end. Then, over a single August weekend in 1991, operations were moved in-house. Because the telephone representatives were merely retrieving data from a new location, "clients never noticed the system conversion until later that year when we publicized it," DiStefano says.

But moving to a full-scale client/server approach was not without its tribulations. "It truly is a challenge to scale systems from the department level to enterprisewide systems," says Dave Stoltzfus, assistant vice president of advanced technology, who was charged with turning the strategic plan into a working system. "There's a big gap that still exists between the ability to support enterprisewide applications and department applications with client/server, but it's closing."

The key problem, he says, lies not with the application's ability to scale but with the development environment itself. There are too few tools that support multideveloper projects, change management and other functions required when a client/server project goes mainstream. Vanguard closed the gap with a lot of home-brewing.

Following the system implementation in 1991, Vanguard built its Investment Education Workstation. This is a hypertext-based client/server system that helps Vanguard's staff respond to call deluges. The system gives non-phone-service staff members instant access to descriptions of the company's fund offerings, investment objectives, risk tolerance and performance information, among other subjects.

Updated continuously with the latest prices, yields and market highlights, the system enables nearly anyone at Vanguard to field customer questions. As a result, Vanguard requires between 60 and 90 fewer phone representatives, saving the company about $3 million annually.

The next step, according to DiStefano, is to develop consumer software that will be sold directly to Vanguard customers.

"We need to bring technology to the hands of our clients," Stoltzfus says. "If you want to play in the game in the next millennium, you had better like that."

Jenkins is a freelance writer in Ansonia, Conn.

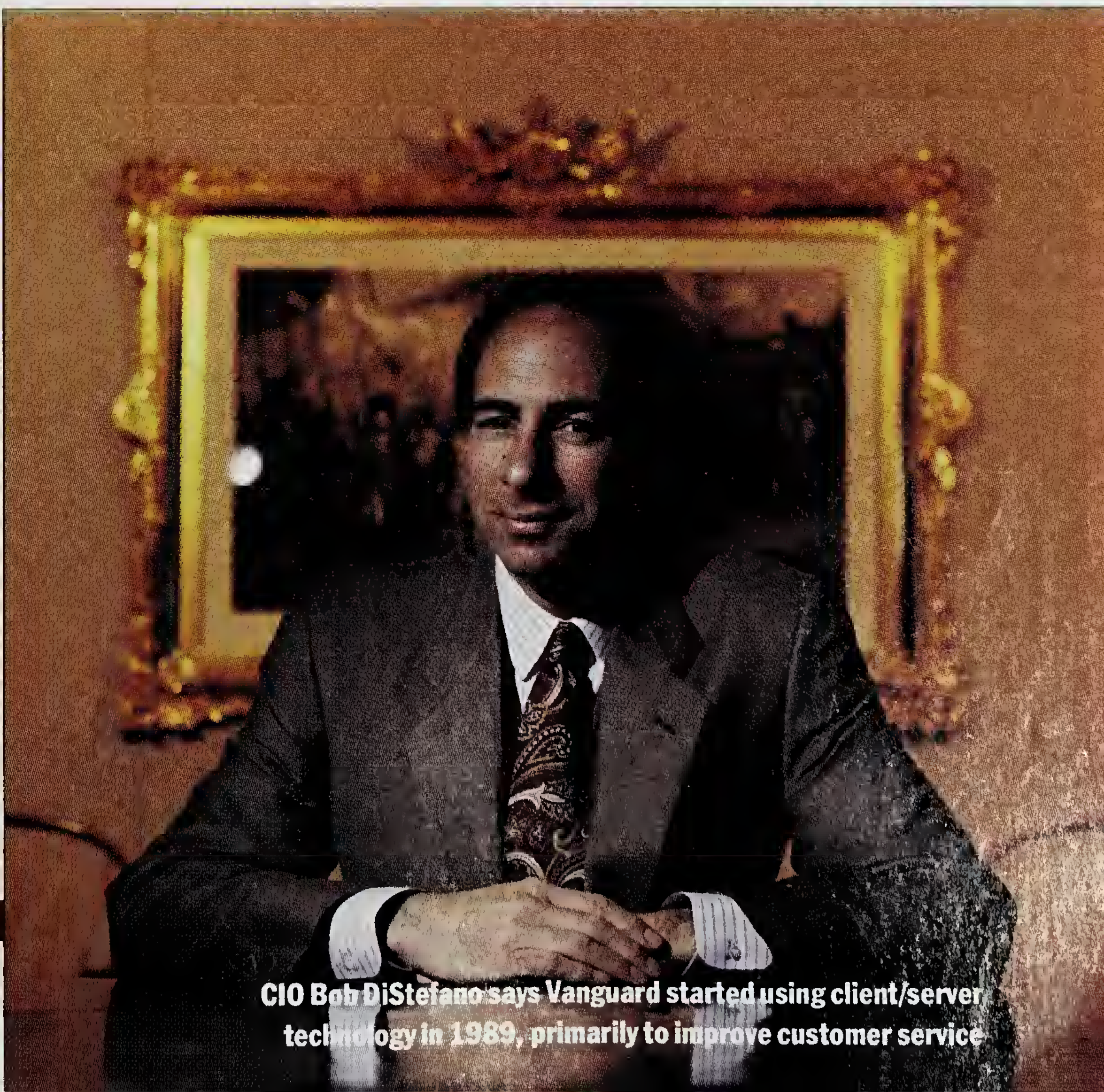
PHOTOGRAPHY BY EDWARD SANTALONE

PANELIST VIEW

Bill Rabin

Managing director of technology research, J. P. Morgan & Co., New York

"Vanguard is making the most of its experience as an early client/server adopter, with some 23 applications rapidly deployed. Key to its success: blending together applications that address core functions of the business."



CIO Bob DiStefano says Vanguard started using client/server technology in 1989, primarily to improve customer service

PHOTOGRAPHY BY MICHAEL BRYANT

OBJECT-BASED FLEXIBILITY IS MERCER'S KEY TO MAKING MONEY AS A BENEFITS OUTSOURCER

All 401Ks Are Not The Same

BY MARY BRANDEL

When it comes to fashions in employee benefits management, William M. Mercer in Deerfield, Ill., has seen and done it all.

Years ago, Mercer mainly functioned as a consultant to help companies set up cost-efficient plans. In the mid-1980s, it developed a software business to help clients handle the increasingly complex calculations that new services such as 401K plans demanded.

Then, in 1993, many firms washed their hands of benefits record-keeping. So now Mercer — the world's largest benefits consulting firm — is in the outsourcing business.

But this latest business change could not have made money without a systems overhaul, says Terry McLane, Mercer's head of technology. So this past January, Mercer went live with a three-tier client/server system with an object-oriented middle tier developed for maximum customization.

The reason: No two clients' benefits systems are exactly the same. "This business depends on economies of scale [and doing things] as cheaply as possible. You can't do that if every new customer is a one-off approach," McLane says.

Complicating things even more, Mercer wanted to provide three front-end options: PCs, touch-screen kiosks and phones, each written with a different scripting language. If a client had different front ends, that meant multiple places for code rewrites when changes such as government regulations occurred.

But with the new "program by exception" system, Mercer can build a base system and put all the volatile code in the C++-based middle tier. "The front end is always a smart client that sends a message like 'calculate benefit amount,'" McLane says. The Sybase, Inc. back end does all the database processing.

The system has enabled Mercer to catch up to one of its competitors that had a three-year jump in outsourcing, McLane says. "We all do the same thing functionally. But [potential clients] can see why we'll be able to serve them better, more cheaply, in the long run."

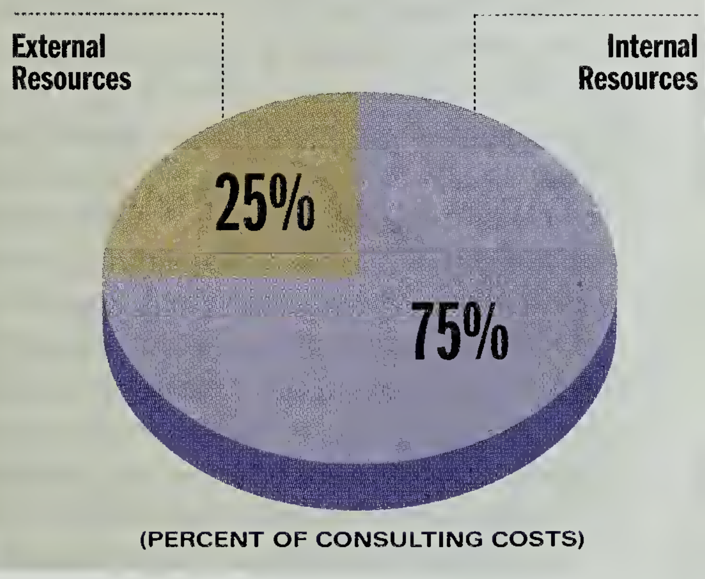
Mercer has built other client/server systems, too. With Data Director, Mercer integrates clients' dispersed human resources, payroll and benefits data into one Sybase database. "We go get various data feeds, and the client gets a one-system view," he says.

Champ is a decision-support application Mercer built with Powersoft's PowerBuilder to let clients evaluate health care options. Mercer updates the database quarterly.

Brandel is Computerworld Client/Server Journal*'s senior editor.*

Looking inward

Training and development claimed the bulk of Mercer's client/server costs, primarily due to heavy use of internal resources.



(PERCENT OF CONSULTING COSTS)

Source: CSJ Survey

VITAL STATISTICS

William M. Mercer

Deerfield, Ill.

MISSION

To create an efficient and flexible outsourcing business by building easily customized employee benefits systems.

APPLICATION PROFILE

A three-tiered system with a choice of front ends: C-based kiosks, voice input or PowerBuilder-built PC applications. These communicate via remote procedure calls to C++-based application servers on Hewlett-Packard Co. 9000 boxes that in turn communicate with Sybase database servers.

1994 REVENUE

$600 million

1994 IS BUDGET

$60 million-plus

1994 CLIENT/SERVER EXPENDITURES

$10 million to $20 million

Application development: 20%
Networks and infrastructure: 5%
Professional services: 70%
Development tools: 5%

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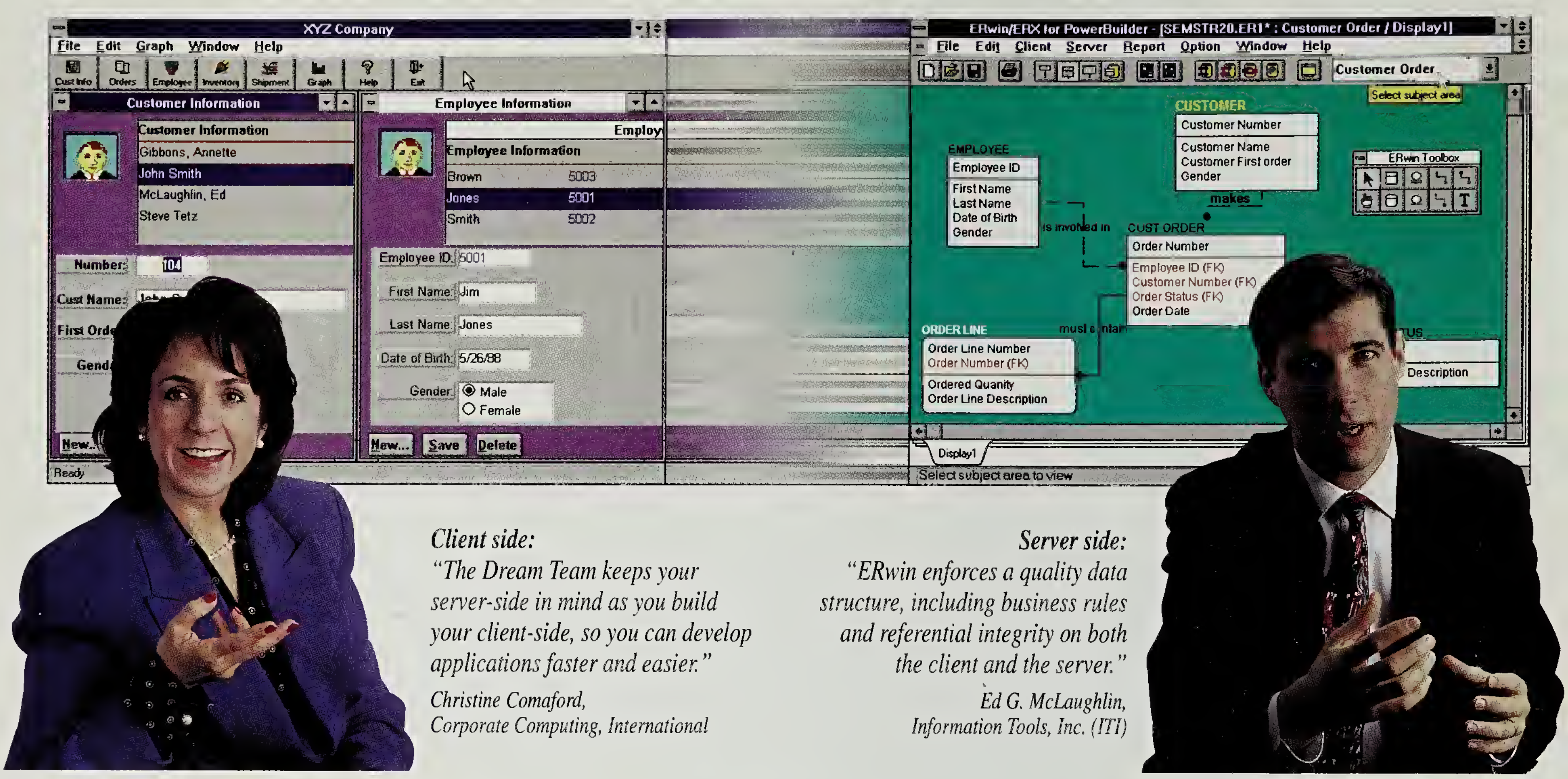

Customer Information
Gibbons, Annette
John Smith
McLaughlin, Ed
Steve Tetz
Number: 104

Employee Information
Brown 5003
Jones 5001
Smith 5002
Employee ID: 5001
First Name: Jim
Last Name: Jones
Date of Birth: 5/26/88
Gender: ● Male ○ Female

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Christine Comaford,
Corporate Computing, International

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Ed G. McLaughlin,
Information Tools, Inc. (ITI)

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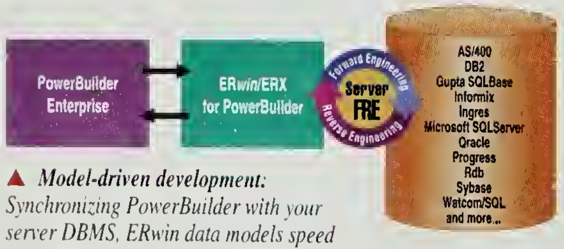

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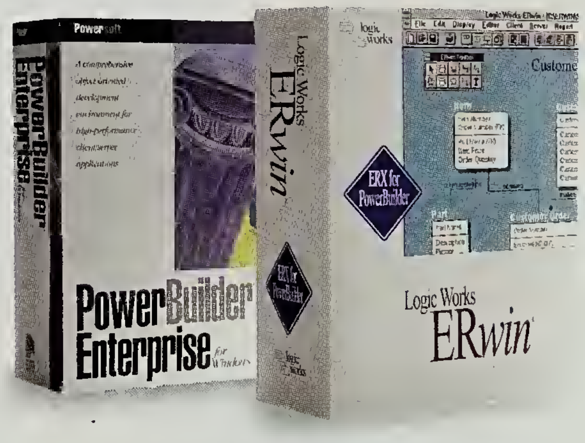

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